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FM 105-5

DEPARTMENT OF THE ARMY FIELD MANUAL

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DEPARTMENT OF THE ARMY • AUGUST 1955



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FIELD MANUAL

MANEUVER CONTROL

CHANGES } DEPARTMENT OF THE ARMY
No. 1 } WASHINGTON 25, D. C., 6 June 1956

FM 105-5, 18 August 1955, is changed as follows:

3. Umpire Missions

* * * * *

b. The primary missions of an umpire are—

* * * * *

(3) To create realism by depicting those hostile ground, sea, and air activities which should compel the individual soldier and the unit commander from the squad up to take action, make decisions, **and apply the letter and the spirit of the Code of Conduct** during a tactical exercise just as they would be compelled to do in combat.

* * * * *

65. Capture of Personnel

* * * * *

b. Prisoners of war must be guarded properly to prevent escape just as they would be in an actual situation **except that live ammunition should not be issued to prisoner of war guards.**

* * * * *

f. (Added) Capturing forces or units should subject maneuver prisoners to interrogation, indoctrination in Aggressor forces concepts and exploitation in respect to questionnaires, broadcasts and written statements, but will not subject them to indignities or physical pressure. Captors will remain responsible for the health and welfare of prisoners and will not endeavor by undue means to force prisoners to violate the Code of Conduct. Commanders and umpires will ensure that realism is kept within reasonable bounds. In considering the circumstances of capture, proper recognition will be given surprise, aggressiveness, stealth, ambush and mobility so that these factors are tactically rewarded in the play of the exercise. When appropriate, umpires will include in their daily reports the following additional items:

- (1) Actions of prisoners while under control of opposing force.
- (2) Treatment accorded prisoners by their captors.
- (3) Prisoner knowledge of provisions of the Code of Conduct and Geneva Conventions of 12 August 1949.

Figures 8 and 9. So much of figures 8 and 9 as reads AN/GRC-10 is changed to read AN/PRC-10.

APPENDIX I

REFERENCES

Add the following references in proper sequence:

DA Pam 21-71. The U. S. Fighting Man's Code
TC 21-1----- Code of Conduct

APPENDIX III

UMPIRE TRAINING PROGRAM

The following training * * * these special operations. All umpires will be enjoined to emphasize realism during maneuvers in consonance with the provisions of the Code of Conduct.

* * * * *

By Order of *Wilber M. Brucker*,
Secretary of the Army:

MAXWELL D. TAYLOR,
General, United States Army,
Official *Chief of Staff*.

JOHN A. KLEIN,
Major General, United States Army,
The Adjutant General.

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NG: State AG (6); units—same as Active Army except allowance is one copy to each unit.

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For explanation of abbreviations used, see SR 320-50-1.

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*This manual supersedes FM 105-5, 24 November 1952.

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CHAPTER 1

INTRODUCTION

1. Purpose

This manual is designed as a guide for use in umpiring tactical exercises.

2. Application and Scope

This manual is specifically applicable to umpiring tactical exercises in which Aggressor, the maneuver enemy, is used to furnish logical and realistic opposition for United States troops. It contains the missions of the umpire, the organization and functions of an umpire group, methods of umpiring, umpire training, umpire communications, and transportation. It also sets forth methods and procedures for controlling the operations of one or both of the opposing forces in order to accomplish the purpose or objectives of the exercise. In any tactical exercise, regardless of the size or type of participating units or whether or not an actual Aggressor enemy is employed, the principles set forth herein should be adhered to and the procedures modified only when the scale and type of the exercise and facilities available so dictate.

3. Umpire Missions

a. The umpire system is designated to provide a media through which the exercise director can in-

fluence the operations of the opposing forces. Therefore, the umpire system must provide the exercise director with current information on the dispositions, operations, plans, and other activities of all participating units.

b. The primary missions of an umpire are—

- (1) To report, as directed, all current and planned activities of the units to which assigned.
- (2) To determine and portray the effects of movement, disposition, and fire power on the development of a tactical situation by the assessment of logical losses in personnel and material and the announcement of the resulting decisions affecting the immediate operations of either or both of the opposing forces.
- (3) To create realism by depicting those hostile ground, sea, and air activities which should compel the individual soldier and the unit commander from the squad up, to take action or make decisions during a tactical exercise just as they would be compelled to do in combat.
- (4) When directed by the officer responsible for the preparation and conduct of the exercise, to critique the operations, and to report on the proficiency of the unit for which he is umpire.

4. Objective of Any Tactical Exercise

The objective of any tactical exercise is to train troops, staffs and commanders, and to prepare them

for combat operations. For effectiveness, each tactical exercise must have specific and well-defined training objectives.

5. Aggressor, the Maneuver Enemy

a. Aggressor, the maneuver enemy, with an imaginary and fictitious national background and history, order of battle, uniform and insignia, language, customs, basic philosophy, and a sound but decidedly different tactical doctrine, has been developed to provide a real, live maneuver enemy to oppose United States Forces in all tactical exercises. The detailed organization, doctrine and character of aggressor will provide information on which to base intelligence estimates for inclusion in the exercise. The use of Aggressor as the maneuver enemy will leave little to the imagination of the individual soldier and will make it possible to acquaint him with the immediate and overall situation concerning a realistic enemy (FM's 30-101, 30-102, 30-103, and 30-104). Aggressor will be employed in all tactical exercises held in the zone of interior. Elsewhere, theater commanders will determine whether or not Aggressor will be used.

b. The Aggressor Cadre provides a permanent agency to develop the doctrine and techniques to be employed by Aggressor, the maneuver enemy. When directed by competent authority, elements of the Aggressor Cadre will be made available to the commander responsible for the preparation and conduct of designated tactical exercises for the purpose of rendering advice and assistance on Aggressor representation in such exercises (FM 30-104).

6. Employment of Aggressor in Tactical Exercises

a. General. Aggressor may be employed in any type tactical exercise. The Aggressor Force may be represented, outlined, or imaginary, and its operations may be controlled by the exercise director or it may be free to react to the operations of the opposing United States Force within established limitations as to mission, area, and time available, which are applicable to both sides. The manner in which Aggressor is employed in a tactical exercise is dependent upon the purpose and type of the exercise and is normally determined by the exercise director. It is emphasized that, in any tactical exercise, sufficient Aggressor strength must be present in order to develop logical and realistic situations; therefore, United States troop units of the size and type required must be provided. These United States troop units must be made available to the Aggressor Force Commander early in the preexercise training phase so that they can be organized, uniformed, equipped, and trained as prescribed in appropriate Aggressor field manuals (FM's 30-101, 30-102, 30-103, 30-104) prior to the start of the tactical phase of the exercise. The training time required will vary with each exercise. In the controlled exercise, additional time must be provided so that the Aggressor Force can rehearse the preplanned tactical operations on the actual terrain and prepare necessary tactical positions and installations. For larger exercises the time required for such training and rehearsals will approximate 1 month.

b. Aggressor Force—Controlled.

- (1) In those tactical exercises in which the operations of the Aggressor Force are controlled by the Exercise Director, and the United States Force is permitted freedom of operations within prescribed limitations established by the Exercise Director, umpires for the United States Force must be provided. In this type exercise the plans and actions of the United States Force Commander are influenced by the Exercise Director by placing Aggressor opposition against United States units in a series of situations designed to accomplish the objectives of the exercise. Umpire liaison teams, fire marker teams, and such additional umpires as are required for the realistic play of the exercise should be provided for the Aggressor Force.
- (2) The Aggressor Force Commander is furnished complete information on the United States Force dispositions and plans in order to more effectively present planned situations to the United States Force.
- (3) A detailed schedule of events, or control plan, is published by the exercise director as a guide for the Aggressor Force Commander and the chief umpire. The control plan contains a series of situations designed to accomplish the objectives of the exercise and the specific role of the Aggressor Force in each, including intelligence activities, and preplanned special operations. Control

plans must be flexible and capable of being adjusted to meet changing conditions encountered during the development of the tactical situation. The umpires and the Aggressor Force should rehearse the pre-planned tactical operations contained in the control plan on the actual terrain prior to the start of the exercise.

c. Aggressor Force—Free.

- (1) In those tactical exercises in which both the Aggressor Force and the United States Force are permitted freedom of operations within prescribed limitations established by the exercise director, umpires are required for both sides.
- (2) The umpire organization should provide for unit umpires, liaison teams, fire marker teams, and special umpires as required for both the Aggressor Force and the United States Force. The decision as to the effect of the opposition on the immediate tactical operation of either or both of the opposing forces is normally made by the senior United States Force unit umpire involved. In a specifically designated situation, however, the chief umpire may relieve the unit umpire of this authority and delegate it to one or more umpire liaison teams for the specific situation only.
- (3) The exercise director assigns missions to both the Aggressor Force and the United States Force.

(4) Both Aggressor Forces and United States Forces collect and process information and develop their own combat intelligence just as they would be compelled to do in combat. The exercise director furnishes both forces with the information and intelligence of the enemy that normally would be furnished by a higher headquarters.

7. Realism in Tactical Exercises

a. Tactical exercises must be carried out under conditions resembling battle as nearly as possible. Unrealistic training in tactical exercises leads to excessive losses on the battlefield.

b. Control during a tactical exercise is of utmost importance. This control is exercised by means of umpires assigned to the various units and special activities. Every effort will be made to hold to a minimum the employment of flags and other practices which tend to produce artificiality. Instead, the umpire must verbally paint the battle picture, assess casualties and damages, and announce decisions in a manner that will provide the realistic war situation that is lacking due to the absence of live ammunition. By "playing the game" the umpire can assist in instilling combat realism into any training exercise.

c. Atomic play will be included in all tactical exercises when appropriate. Every effort will be made to permit an atomic attack to have its full impact on the exercise in order to impress on commanders and troops the magnitude of its effects on all aspects of planning and operations. This requires

particularly forceful action on the part of umpires in requiring units and commanders "to play the game" when they have been assessed heavy casualties and equipment damage.

8. Intelligence Aspect of Tactical Exercises

a. All tactical exercises should require the use of every aspect of combat intelligence from the collecting and reporting of information by the individual soldier to the collecting and processing of information and intelligence by specialized military intelligence agencies and personnel, and the dissemination and use of the resulting intelligence.

b. The Aggressor Force, particularly in the controlled exercise, by conducting activities on the ground and by providing prepared prisoners of war, documents, propaganda leaflets, traffic for radio intercept, and simulated dead, makes available enough detailed information to realistically present an overall picture of the Aggressor situation to the United States Force intelligence officers, when they successfully utilize the agencies available to them.

c. The responsibility of the individual soldier to collect and report military information must be emphasized throughout each tactical exercise.

d. Aggressor doctrine emphasizes the utilization of clandestine intelligence, including espionage, sabotage, and other subversive actions. Security consciousness of the individual soldier and the integration of counterintelligence activities into the maneuver plan should also be stressed in planning and operational phases.

CHAPTER 2

UMPIRE ORGANIZATION

Section I. ORGANIZATION AND FUNCTIONS OF THE UMPIRE GROUP

9. Exercise Director

The exercise director plans and conducts the exercise. Although he does not participate in the operations of the opposing forces, he acts as the superior commander of the United States Forces, and, through the Control Command, as Commander of the Aggressor Forces and of the Umpire Group. He presents the situation, initiates and coordinates the planning for and execution of the tactical phase, and finally terminates the exercise. He conducts the final critique. In small tactical exercises the exercise director and chief umpire may be one and the same person.

10. Organization for Control

The exercise director may control the maneuver by either of the following methods:

a. When the maneuver is conducted as outlined in paragraph 6b, use of a Control Command is desirable. The Control Command is a maneuver management agency for the exercise director. The Aggressor Forces and the Umpire Group are under the Control Command. This command has in addition an Op-

erations Section and a small Administrative Section to support the Aggressor Forces and Umpire Group (A, fig. 1). The functions of the Control Command are as follows:

- (1) Detailed planning in accordance with the scenario and with exercise directives.
- (2) Conduct of the Umpire School.
- (3) Coordination of Aggressor Forces and the Umpire Group with the general plan of the exercise.
- (4) Conduct of required rehearsals of Umpire Group with Aggressor Forces prior to the start of the exercise.
- (5) Collection of information and data needed for the completion of the exercise final report.

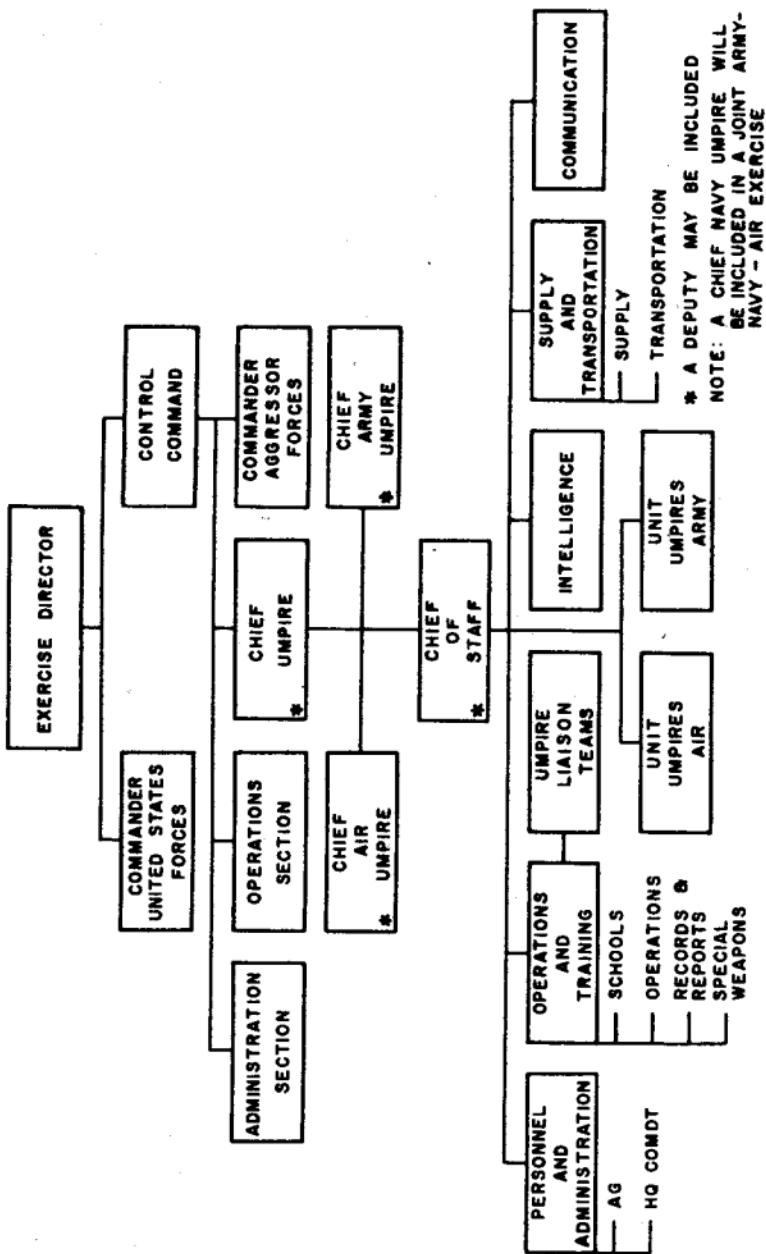
b. When the maneuver is conducted as outlined in paragraph 6c, above, and friendly Aggressor Forces are approximately equal in strength, the organization shown in B, figure 1, is more effective. If this organization is used, the functions outlined in *a*, above, become the responsibility of the exercise director and the chief umpire.

11. Umpire Group

The organization of the umpire group shown in figure 1 is intended as a guide and may be modified to meet the requirements of a particular exercise. The chain of command for unit umpires parallels that of the units or headquarters to which they are assigned.

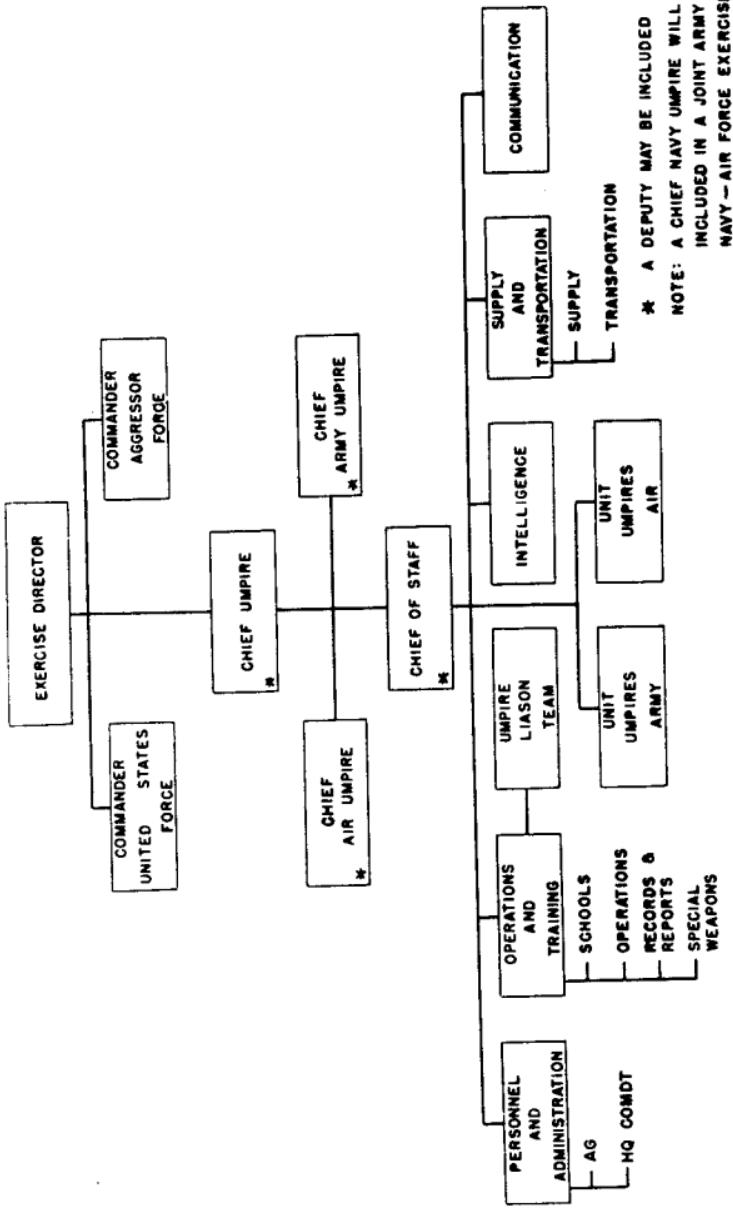
12. Umpire Group Headquarters

- a. Chief Umpire.* Commands all umpire personnel. Responsible for all umpire training and for the umpiring of the tactical exercise.
- b. Chief of Staff.* Principal assistant and advisor to the Chief Umpire. Directs and coordinates the work of the various staff sections.
- c. Chief Army Umpire.* Responsible to the Chief Umpire for umpiring the army phase of the exercise and for army umpire training.
- d. Chief Air Umpire.* Responsible to the Chief Umpire for umpiring the air phase of the exercise and for air umpire training.
- e. Chief Navy Umpire.* Responsible to the Chief Umpire for umpiring the naval phase of the exercise and for navy umpire training.
- f. Personnel and Administration Section.* This section performs administrative and personnel duties for the umpire group and provides such assistance as required to the operations and training section for supervising the umpiring of administrative activities.
- g. Intelligence Section.* This section, in conjunction with the Operations and Training Section, supervises the umpiring of intelligence and counterintelligence activities and the intelligence training of umpire staff and unit umpires. In addition, this section supervises intelligence and counterintelligence functions pertaining to the umpire group, coordinates the security policy for the umpire group, and arranges for personnel and equipment to provide intelligence support for the umpire group.
- h. Operations and Training Section.* This section plans, coordinates, and supervises the training and



Controlled Aggressor Force.

Figure 1. Organization of the umaire ground.



Free Aggressor Force.

Figure 1—Continued.

operations of unit umpires and umpire liaison teams. During the tactical phase of the exercise this section reviews and analyzes daily the various umpire reports and compiles data on errors and deficiencies noted for the information of the chief umpire. It prepares the final umpire report and the historical summary of umpire activities. It gathers and analyzes data with reference to atomic play in the exercise.

i. Supply and Transportation Section. This section supervises the procurement and issue of umpire supplies and equipment, and the operation of the umpire motor pool. This section also provides assistance as required to the operations and training section for supervising the umpiring of supply and transportation activities.

j. Communication Section. This section plans, directs and supervises the installation and operation of the umpire communications system, and provides instructors in the operation of communication equipment for the umpire school. This section also provides assistance as required to the operations and training section for supervising the umpiring of communications activities.

k. Umpire Liaison Teams.

(1) Umpire liaison teams, a part of the operations and training section, are organized, equipped, and prepared to serve in the field as staff representatives of the Chief Umpire, to reinforce unit umpires, to umpire special situations, and in emergencies to take action in the name of the Chief Umpire. In large scale exercises umpire liaison teams

may be assigned to the senior umpire of participating corps or Field Army in lieu of the Umpire Group.

(2) The umpire liaison teams must be in direct communication with the operations and training section at Umpire Headquarters, or with a specified subordinate field agency of that headquarters.

l. Service Support. Administrative, supply, signal, and maintenance support must be provided the umpire group. For large exercises, selected TOE units capable of providing this support should be assigned the umpire group to work under the supervision of appropriate staff sections (app. II).

Section II. PERSONNEL

13. Assignment of Umpires

a. Care should be exercised in the assignment of umpires. Every effort should be made to obtain personnel with previous umpire experience for key staff and specialist positions. Officers assigned as unit umpires should have served in the same branch of service as the unit to which assigned. Combat experience is especially desirable. Personnel should, so far as possible, be from units other than those participating in the exercise to minimize a tendency to become a "part" of the unit and to facilitate maintaining strict neutrality in attitude and actions.

b. To assist the Exercise Director and the Chief Umpire in carrying out their responsibilities with respect to atomic play, officers trained especially in this aspect of the maneuver should be integrated.

into all major units at Umpire Headquarters and at Exercise Director Headquarters.

14. Personnel Requirements

The personnel requirements set forth in this section are intended as a guide only. The requirements for a specific exercise may vary considerably from those outlined below. In exercises of regimental or smaller scale, training tests or organization and equipment tests, provision of umpires as indicated in column 1, paragraph 15, is appropriate. In exercises of division or larger scale assignment of umpires as indicated in column 2, paragraph 15, will generally be adequate. The objective of a particular exercise may indicate the desirability of using a combination of columns (1) and (2).

15. Unit Umpires Infantry Division

<i>a. Division Troops</i>	<i>(1) Small scale exercises</i>		<i>(2) Large scale exercises</i>	
	<i>Off</i>	<i>Driver</i>	<i>Off</i>	<i>Driver</i>
Division Headquarters-----	3	2(a)	3	2(a)
Intelligence Umpire-----	1	1(a)	1	1(a)
“Trouble Shooter” Umpire-----	4	4(a)	4	4(a)
Army Aviation Empire-----	1	1(a)	1	1(a)
Special Troops, including Hq & Hq Co, Band, and Re- placement Company.	2	2(a)	0(c)	-----
Military Police Company-----	1	1(a)	0(c)	-----
Signal Company-----	1	1	1	1
Ordnance Battalion-----	1	1(a)	1	1(a)
Ordnance Co Forward-----	3	3(a)	0(c)	-----
Ordnance Co Rear-----	1	1	0(c)	-----
Quartermaster Company-----	1	1	1	1
Reconnaissance Company-----	1	1(a)	1	1(a)
Reconnaissance Platoon-----	1	1	0(d)	-----

	(1) Small scale exercises		(2) Large scale exercises	
	Off	Driver	Off	Driver
Engineer Combat Bn (b)	1	1	2	2
Engineer Company	1	1(a)	0(d)	-----
Tank Battalion	2	2(a)	1	1(a)
Tank Company	1	1(a)	2	2(a)
Tank Platoon	1	1(a)	0(d)	-----
Division Artillery Hq	1	1(a)	1	1(a)
Fire Support Coordination Center.	1	1(a)	1	1(a)
Artillery Bn (Including AA).	1	1(a)	3	3(a)
Artillery Btry (Including AA).	1	1	0(d)	-----
Medical Battalion	1	1	1	1
Clearing Company	1	1	0(c)	-----
Ambulance Company	1	1	0(c)	-----
<i>b. Infantry Regiment.</i>				
Regimental Headquarters	2	1(a)	2	2(a)
Service Company	1	1	0(c)	-----
Heavy Mortar Co	1	1(a)	0(c)	-----
Tank Co (see <i>a</i> above)				
Medical Company	1	1	0(c)	1
Infantry Bn Hq	2	2(a)	1	1(a)
Rifle Co	1	1(a)	2	2(a)
Rifle Platoon	1	1	0(d)	-----
Weapons Platoon	1	1	0(d)	-----
Heavy Weapons Co	1	1(a)	2	2(a)
Machinegun Platoon	1	1	0(d)	-----
Mortar Platoon	1	1	0(d)	-----
Antitank Platoon	1	1	0(d)	-----
Intelligence & Reconnaissance Platoon.	1	1	1	1

Notes. (a) Also operates radio.

(b) Umpires assigned to Engineer units on same basis as infantry if to act as infantry.

(c) Commanders of units also act as unit umpires.

(d) Commanders of units act as unit umpires in absence of designated umpires of their parent unit and in specific instances assist unit umpires as requested, viz., dissemination of information, designating casualties, etc.

16. Unit Umpires Armored Division

Umpires are assigned to comparable units of the armored division on the same basis as to units of the infantry division (par. 15). Additional umpires are assigned to other units of the armored division as follows:

	Small scale exercises		Large scale exercises	
	Off	Driver	Off	Driver
Combat Command Hq-----	2	2(a)	2	2(a)
Division Trains Hq-----	1	1(a)	1	1(a)
Quartermaster Bn Hq-----	1	1(a)	1	1(a)
Ordnance Bn Hq-----	1	1(a)	1	1(a)
Reconnaissance Bn Hq-----	1	1(a)	1	1(a)
Mortar Platoon-----	1	1	0	0

Note. (a) Also operates radio.

17. Unit Umpires Airborne Division

Umpires are assigned to comparable units of the airborne division on the same basis as to units of the infantry division (par. 15). Umpires are assigned to other units of the airborne division as follows:

	Small scale exercises		Large scale exercises	
	Off	Driver	Off	Driver
Parachute Maintenance Co-----	1	1	0	0
Antitank Platoon-----	1	1	0	0
Support Company Hq-----	1	1	1	1

18. Unit Umpires Armored Cavalry Regiment

Umpires are assigned to the howitzer company of the armored cavalry regiment on the same basis as to a tank company (par. 15). Assignment of umpires to other units of the armored cavalry regiment is on the basis of assignment to units of the infantry division and the armored division (pars. 15 and 16).

19. Umpire Liaison Teams

Umpire liaison teams require one officer and two radio operator-drivers.

20. Fire Marker Teams

Each ground fire marker team consists of one officer and one radio operator-driver. Each aerial fire marker team consists of one officer (pilot-radio operator) and one assistant. A fire marking team with the capability of atomic fire marking is considered essential to realistic training in atomic play.

21. Miscellaneous

a. Umpires are assigned to all operative special units such as military intelligence service units, psychological warfare units, electronic warfare units, Army Security Agency units, Counter Intelligence Corps units and others as required.

b. One officer umpire should be provided for each of the following:

- (1) Agent mission.
- (2) Guerrilla mission.
- (3) Raid or infiltration mission. (Unit umpire may be used.)
- (4) Patrol. (Unit umpire may be used.)
- (5) Prisoner-of-war installation at divisional or higher level (to umpire handling, processing, and exchange of prisoners of war).

c. Headquarters, depots, hospitals, and units of a logistical command are assigned umpires on the same basis as comparable headquarters and units listed in paragraph 15. Umpire requirements will be less

for those units whose missions make them comparatively stable.

d. Local umpires will make the decision regarding chemical casualty assessment. These decisions plus any questions regarding the same should be included in the remarks of the daily report.

e. To insure adequate CBR umpiring, it is advisable to provide one or two special CBR umpire teams at critical points of CBR play to supplement regular unit umpires.

22. Noncommissioned Officers

Qualified noncommissioned officers may be used as assistant umpires.

23. Reporting to Units

Umpires should join the unit or headquarters to which assigned a minimum of 1 day and preferably 2 days prior to the start of the exercise in order to permit them to become familiar with the unit, its status, and its missions. The unit to which assigned provides class I and III support for the umpire.

Section III. UMPIRE TRAINING

24. General

Regardless of how well trained troops may be, tactical exercises are successful only when effectively umpired by trained umpires. Every troop unit should maintain a nucleus of trained umpire personnel to be used in tactical exercises.

25. The Umpire School

The umpire school is the key to the successful umpiring of any tactical exercise. Therefore, it is

essential that planning for the umpire school be initiated at the earliest practicable date. Qualified personnel must be assembled early in the planning phase to prepare the umpire training program and necessary instructional material. Previously qualified instructors should be made available for the umpire school.

26. Program of Umpire Training

a. The time required for umpire training depends upon the status of training of the umpire personnel and the type of tactical exercise to be conducted. This may vary from a few hours for a squad or platoon problem to as much as three weeks for a joint Army-Navy-Air Force exercise. The training should include classroom conferences and demonstrations of umpiring followed by reconnaissance of the exercise area and actual practice in umpire control methods with troops. Particular attention should be paid to schooling umpires in atomic and CBR aspects of the exercise and their duties incident thereto. Umpire checklists should be provided. Communications should be thoroughly tested during the practical training in the field. Practical exercises conducted during the umpire training phase afford the chief umpire a means of testing the umpires. The exercises should be varied so that umpires develop confidence in their ability to handle all situations likely to be encountered. Where circumstances permit, umpires should work with units in the field, to afford them an opportunity to apply and practice the methods and techniques taught in the classroom. Small unit exercises are particularly

valuable, not only for this purpose, but also to orient troops in umpire methods and procedures. This type of training is especially suitable for the training of large groups since those not engaged in umpiring may observe and later critique the performance of the others.

b. One or more practical exercises should be conducted for umpires prior to any large tactical exercise. Simulated atomic bursts, casualty and damage assessments, and reporting procedures incident to the use of atomic weapons should be rehearsed by the umpire group of each regimental size unit prior to the conduct of the field exercise.

Section IV. IDENTIFICATIONS

27. Identification of Personnel

a. United States Force Troops. Regulation uniform of the Armed Forces of the United States.

b. Aggressor Force Troops. Aggressor uniforms and insignia as prescribed in FM 30-101.

c. Umpires, Except Fire Markers. A white cloth loop on the left side under the arm and over the shoulder.

d. Fire Markers. A red cloth loop on the left side under the arm and over the shoulder.

e. Personnel Assigned to the Headquarters of the Exercise Director. A red and white cloth loop on the left side under the arm and over the shoulder.

f. Observers and Other Neutral Personnel. A green cloth loop on the left side under the arm and over the shoulder.

28. Identification of Vehicles

- a. United States Force.* As prescribed in AR 850-5.
- b. Aggressor Force Vehicles.* As prescribed in FM 30-101.
- c. Umpire Group.* A white flag approximately 1 foot square on a 4 foot staff fastened to the right front bumper of the vehicle.
- d. Headquarters, Exercise Director.* A red and white flag approximately 1 foot square on a 4 foot staff fastened to the right front bumper of the vehicle. Upper half of the flag is to be white and the lower half is to be red.
- e. Other Neutral Vehicles.* A green flag approximately 1 foot square on a 4 foot staff fastened to the right front bumper of the vehicle.

29. Identification of Aircraft

- a. Umpire and Exercise Director aircraft* are marked with four twelve-inch bands alternating white and green around each wing. Similar markings are placed around the fuselage of helicopters.
- b. Aggressor aircraft* bear the Aggressor marking as prescribed in 2M30-101.

30. Identification of Medical Vehicles and Installations

- a. Red Cross markings* are usually used on medical vehicles and installations. On occasion their use may be curtailed by the commander for tactical reasons. Medical units and personnel participating in tactical exercises are considered under the protective provisions of the Geneva Convention.

b. Actual casualties and emergency medical supplies are transported in vehicles displaying a Red Cross Flag. Such vehicles are permitted complete freedom of action by all personnel.

CHAPTER 3

UMPIRE CONTROL, METHODS, AND PROCEDURES

Section I. UMPIRE CONTROL

31. Control

a. Control during a tactical exercise is of the utmost importance. This control is exercised by means of umpires assigned to units and activities. The combat responses or actions of participating troops will be guided by the unit umpire by means of decisions and direct announcements. Overall control will be exercised by the chief umpire through umpire channels. It is essential that constant communications be maintained between the various operating elements of the umpire group.

b. The unit umpire must determine and portray to the unit the effect of movements, dispositions, fire power, atomic bursts, surprise, and maneuver on the tactical situation. He describes existing battlefield conditions to cause proper reactions by troops and commanders. Failure to react properly should result in losses being assessed against the unit.

c. The small unit umpire will exercise control by announcements to individuals and units as appropriate. These announcements should make each soldier aware of the situation and the nature of hostile op-

position. When making announcements, the umpire must consider whether, in actual battle, the information would be secured by an individual, a portion of the unit, or the entire unit. These announcements must be realistic and so phrased and delivered that the words and tone of voice carry the proper impression. The effects of atomic play must be portrayed in a realistic manner and the announcement must be delivered to the troops in such a manner as to emphasize realism.

d. In general, unit umpires comply with instructions pertaining to cover, concealment, and use of lights, that are applicable to the unit to which assigned. The movement, however, of unit umpires is not restricted to any particular area as they must be allowed such freedom of movement as to best perform their duties. Umpires are not required to conform to the radio silence imposed upon the units.

32. Decisions

a. The umpire must render a prompt and logical decision in any situation which arises during the exercise. When contact is made between the opposing forces, the umpires should allow the situation to develop until a tactical decision is indicated or required. Decisions are based on relative firepower, tactical employment, dispositions, cover, concealment, terrain, fields of fire, surprise, and maneuver. Careful consideration must be given to these tactical factors, so that umpiring is not merely a mathematical computation of relative firepower. The umpire will take necessary precautions to prevent bodily contact and injury or damage to materiel. He makes

on-the-spot decisions based upon the current local situation, determines and assesses losses to personnel and materiel. His rulings must be impartial in every case. He must refrain from making tactical decisions which are the responsibility of the unit commanders. Decisions must be prompt. Unit umpires will assess damage and casualties caused by a simulated atomic burst by referring to an "effects overlay" (app. VII). These "effects overlays" will have been distributed to all unit umpires prior to the start of the maneuver. Unit umpires are not required to compute casualty or damage effects. On receipt of the code number of the overlay to be used, ground zero and time of burst, unit umpires note the disposition of personnel and equipment of their assigned unit with relation to ground zero and the damage areas indicated on the "effects overlay."

b. The platoon umpire decides whether either force should be able to advance and portrays the situation accordingly. If, for example, the situation is such that the unit would be unable to advance in actual combat, the umpire "paints the battle picture" by voice or over a loudspeaker to indicate intense and accurate hostile fire. If the unit should be able to advance, the umpire might depict light enemy fire. This affords the platoon commander information which should lead to a decision to advance. If a position is overrun, the umpire prevents hand-to-hand fighting and decides the number of prisoners to be assessed.

c. Umpires may be called upon for decisions when needed for clarification of a decision previously made. Troops must abide by umpire decisions without hesi-

tation or argument. Unit umpires may be used to orient troops on umpire procedures prescribed for the exercise.

d. Umpire decisions and operation of troops are normally based on actual weather conditions. In exceptional cases assumed weather conditions affecting visibility or air operations are authorized if necessary to accomplish the objectives of the exercise.

33. Liaison

a. Unit umpires should be furnished copies of the operations and administrative orders of the units to which assigned as soon as issued so that they have opportunity to study the plan and scheme of maneuver and report the information through umpire channels.

b. Information of strength, dispositions, and plans of action are furnished the battalion umpires of the opposing forces by the assistant battalion umpires of the United States Force. When contact is imminent the assistant battalion umpire at each United States battalion involved, joins the appropriate Aggressor unit commander, or umpire, to effect the necessary exchange of information. Since the United States Force unit umpire in contact must announce the decisions resulting from any action between Aggressor and the United States unit to which he is assigned (par. 6), this procedure is applicable to both the Aggressor Force—Free and the Aggressor Force—Controlled type exercises.

34. Flags and Signals

a. Umpire Emergency Signals.

(1) *To stop infantry action.* White flag during the day and yellow star cluster at night.

(2) *To stop tank action.* Blue flag during the day and green star cluster at night.

(3) *To stop all action.* Red star cluster. (Only regimental umpire or higher authority directs the use of the red star cluster and authorizes action resumed.)

b. Disabled Vehicles. Orange flag.

c. Simulated Obstacles. Black flag at each end of obstacle.

d. Aerial Fire Marking. Red smoke grenades (par. 44f).

e. Air Strikes. Aggressor: Yellow smoke grenades. United States: White smoke grenade.

f. Firing of Tank and Antitank Weapons. When no other means of representing fire is available, a red flag will be waved from the tank or gun position.

g. Atomic Bursts. To be indicated by appropriate simulators; augmented by use of announcements over a public address system on a vehicular mount or army aircraft cruising over the area. Other mass destruction weapons will be the subject of special instructions for each exercise.

h. Front Lines.

(1) *United States.* Cerise panels.

(2) *Aggressor.* Yellow panels.

35. Air Landings and Air Drops

Use of colored smoke in the area of a scheduled air landing or air drop is reserved for the unit making the landing or drop for a period of H minus 30 minutes to H plus 1 hour.

36. Emergency Measures

a. If control is lost, the unit umpire may halt the action of the unit or units involved (par. 33). In that case, he should immediately report the facts together with the action he has taken to the next higher unit umpire, who will investigate the situation, and adopt one of the following courses of action:

- (1) Announce his decision to the unit umpire concerned.
- (2) Direct other subordinate unit umpires to halt the action of their units if warranted by the situation.
- (3) Direct all subordinate unit umpires to halt the action of their units. He then immediately reports the situation to the next higher unit umpire.

b. Action similar to that described in *a* above will be taken when any of the following conditions exist:

- (1) Safety regulations are violated.
- (2) Existing conditions endanger life or property.
- (3) Exercise boundaries or off-limits areas are violated.
- (4) Range fires must be brought under control.

Section II. INFANTRY ACTION

37. General

a. The success of any tactical exercise is directly dependent upon the efficiency and effectiveness of the umpire. Infantry engagements are characterized by close action, maneuver, and the use of supporting

weapons. The infantry umpire not only must keep abreast of the tactical situation but through his knowledge of infantry tactics and the use of supporting weapons, must be able to estimate the capabilities of the unit and the courses of action it may adopt.

b. Infantry action is primarily controlled at the platoon level in accordance with the provisions of paragraphs 31 through 36. To assist platoon umpires in the performance of their duties, each umpire should be equipped with a megaphone. Umpires with units higher than company level perform supervisory duties and report on the functioning of the unit as a whole including its staff. The employment of supporting fires by company, battalion, and regimental commanders during all phases of an action, must be carefully considered when evaluating the comparative fire power. For example, the fact that an attacker, during the approach to contact, is subjected to the fires of the supporting weapons of the defender must be considered in computing the comparative fire power, especially in those cases where such fires are not normally marked. In such cases the assistant battalion umpire of the United States battalion must obtain and transmit to appropriate unit umpires timely information of the supporting fires employed (par. 33). Based on this information, unit umpires may assess casualties and delays as appropriate, when unit commanders fail to take proper action to reduce the effect of these fires.

c. All units in the exercise area, regardless of their type, mission, or location, are subject to attack. Dismounted attacks against any unit will be umpired in a manner similar to that prescribed for infantry ac-

tion. Therefore, umpires assigned to combat support units and service units must be prepared to umpire any engagement in which their units are involved.

38. Umpire Duties

a. Effective umpiring requires attentiveness, imagination, and agility in addition to professional ability. The umpire must discourage illogical situations and unrealistic conditions. Generally, his duties are to—

- (1) Create the atmosphere of a battlefield by depicting the combat situation and events (par. 31).
- (2) Determine and announce the results of contacts, after considering the relative effective fire power, troop dispositions, maneuver, and terrain conditions such as cover, concealment, and fields of fire.
- (3) Assess casualties to men and damage to materiel.
- (4) Designate captured personnel to be retained as prisoners of war.
- (5) Assist commanders in complying with safety regulations and report violations.
- (6) Report on deficiencies noted in both operations and administration.
- (7) Cause action to be halted in the event an illogical situation develops which threatens to get out of control.
- (8) Report plans and dispositions of the unit to the umpire liaison team.
- (9) Command and supervise activities of subordinate umpires.

- (10) Be prepared to critique the performance of the unit to which assigned. Particularly observe action taken by Commanders to exploit the use of atomic weapons by maneuver, and if attacked by atomic weapons, reorganization procedures used.
- (11) Prevent physical contact between troops of the opposing forces to avoid injury to personnel.
- (12) Prevent damage to materiel.
- (13) Instruct personnel of the unit to which assigned in umpire methods.

b. The umpire must PAINT THE PICTURE. The snap of live ammunition and the burst of shells in battle warn the soldier of the presence of hostile fire. Since these sounds are not present in training exercises, announcements are made by the umpire to supplement the use of blank ammunition and represented shell bursts. Examples of correct announcements are—

- (1) "Bridge to right front—400 yards—four shells explode close together—four more shell explosions—another four." (Fire Marker Team marking artillery fire.)
- (2) "A shell just exploded 300 yards in front of you." Two minutes later—"shell coming; impact 100 yards behind you."
- (3) "Fire from a machinegun in the vicinity of that large house (pointing) is searching this area."
- (4) "Machinegun fire sweeping directly over you; that rifleman (designating) nicked in shoulder by ricochet; that rifleman (desig-

nating) disabled for 15 minutes by ricochet off helmet."

- (5) "Bursts from a light machinegun striking in your immediate vicinity (announce a designated place); fire apparently coming from direction of that cornfield. Machinegun fire has ceased."
- (6) "A shell fragment has smashed the longitudinal spirit-level." (After an artillery concentration.)
- (7) (Aside to squad leader during hostile machinegun fire); "You have been hit; you are wounded in left leg."
- (8) "Small arms fire from that (pointing) hill striking in your immediate front."
- (9) "Four shells, exploded 50 yards upwind of you—Odor in air of fresh corn"—10 seconds later "Four more shells just upwind."
- (10) "An atomic weapon has just exploded 1,200 yards to your right. You are seriously burned and your leg is broken by flying debris. Your radio is damaged; you cannot use it." (Assess other casualties and damage in the unit as appropriate.)

c. The following should be avoided:

- (1) Being ignorant of the situation, of the projected course of the exercise, and of umpire duties.
- (2) Failing to give an emphatic and clear description of the situation and the hostile fire.
- (3) Calling out: "You can't advance beyond this point."

- (4) Revealing the projected course of the exercise.
- (5) Permitting a long exchange of fire without announcing a decision.
- (6) Giving hostile fire data to the leader only instead of announcing it so that all can hear.
- (7) Failing to report any independent actions of the unit.
- (8) Shouting "Enemy withdrawing" or "No. 1 rifleman, you see a hostile soldier running toward the rear."
- (9) Permitting an attack to succeed without proper fire support, without individual soldiers working their way forward, or before the enemy withdraws or suffers severe losses.
- (10) Failing to listen to the order of the platoon commander.
- (11) Failing to observe the action of troops constantly.
- (12) Shouting: "Take shelter" or "Shoot," when an enemy machinegun fires with blank cartridges. A remark such as "Bullets are whistling around you" should be made.
- (13) Divulging knowledge of the terrain, or showing a map to the troops when they have no maps on hand, or are forbidden to use them.
- (14) Failing to observe safety precautions (app. IV).
- (15) Permitting troops under fire to expose themselves without imposing penalties.

- (16) Shouting: "Machinegun fire" without clarification instead of announcing "Bursts from two (three) machineguns are striking here (pointing); the bursts are getting closer."
- (17) Permitting unit commanders to use umpire radios when theirs are out of action instead of requiring them to solve their own communications problems.
- (18) Becoming friendly with the unit commander and, as a result, having a tendency to favor the unit which he is umpiring.
- (19) Holding up the progress of the exercise to discuss the situation instead of painting a reasonable picture and maintaining realism.
- (20) Becoming involved in arguments or being unduly influenced by the unit commander. (The umpire must render an impartial decision, which is final, based on sound and accepted practices.)
- (21) Failing to be present when unit commanders issue orders, send messages, hold briefing sessions, or make plans.
- (22) Failing to submit complete and accurate reports at prescribed times.
- (23) Permitting enemy sabotage and penetration teams to accompany him to command posts after completion or termination of their missions. This permits agents to observe the command posts and gives them an undue advantage for later missions.
- (24) Failure to consider fields of fire, laying of gun, etc., during fire duels.

(25) "Your platoon is receiving a dose rate of 350 roentgens per hour." This information should only be revealed to radiological defense monitors possessing the proper survey instruments to determine dose rate levels.

Section III. ARMORED ACTION

39. General

a. The procedures for umpiring armored action are similar to those prescribed for infantry action. Techniques are influenced by the mobility, shock action, and fire power characteristic of armor.

b. Megaphones cannot be used by tank platoon umpires due to the noise created by tanks in motion. The tank platoon umpire should ride in the tank of the platoon commander and use the tank unit's tactical radio net to make his announcements. The umpire must be skilled in the use of tank radios and should not be hasty about expected realistic reactions unless he is assured that his messages were received and understood. He must also realize that his use of the platoon commander's radio interferes with command control. Tanks that fail to react realistically to enemy fire are declared out of action by the platoon umpire. Damage caused by enemy action may vary from a broken track to complete destruction of the tank and crew, however complete destruction of a tank and crew is seldom warranted.

c. Fire duels between tanks, self-propelled guns, and/or antitank guns are judged on the basis of cover, concealment, position, first aimed shot, caliber of weapons, and whether the tanks are stationary or moving. There is no fixed method of determining

the victor. Each action must be determined on its merit. Speed in making a decision based on experience and common sense is necessary. Realism must be maintained. Blue flags or green star clusters halt all tank action and allow proper evaluation of all factors in making a decision (par. 34).

40. Movement of Armor

- a.* All umpires must exercise judgment in any armored action. Where the lives of personnel on the ground are endangered, the umpire must slow down or stop all armored action.
- b.* For the safety of personnel on the ground, no tank will be moved unless the tank commander or crew member is in the open turret hatch. If the interphone system is operating, the other hatches may be closed. If the interphone system is not operating, all hatches will be open so that the tank commander, driver, and assistant driver, if applicable, can constantly observe the ground over which the tank is moving.
- c.* The position of friendly and Aggressor Forces and the density of civilian population will determine what safety measures should be followed. Ordinarily, during the period from sunset to sunrise, movement by armor cross country will be made only when each tank or tracked vehicle is preceded by a dismounted man. (This includes the marshalling, assembly, or withdrawal of armor within the prescribed limits of the exercise area during the hours of darkness.) When special illumination devices are used during night operations, special umpire procedures should be announced.

d. Armor operating on roads at night will conform to instructions issued by the Exercise Director's Headquarters.

e. Personnel on the ground will stand when approached by armored vehicles.

41. Armored Reconnaissance Units

Reconnaissance units operating from vehicles are controlled by umpires in a manner similar to tank control. All tactical vehicles in reconnaissance units do not have radios; therefore, the umpire cannot directly control individual vehicles. If the reconnaissance units operate on foot, they are umpired as infantry.

Section IV. ARTILLERY

42. General

a. Artillery umpires observe the technical functioning and tactical employment of artillery units, assess casualties and damages, and mark the ground zero of atomic bursts and the impact of artillery and heavy mortar fires in target areas.

b. Artillery umpires are organized into two major groups as follows:

(1) Unit umpires (par. 43).

(2) Fire marker umpires (pars. 44 and 45).

43. Artillery Unit Umpires

a. Artillery umpires observe the functioning of the particular unit to which assigned. They supervise subordinate unit umpires and fire marker teams, authorizing the marking of fire missions (including atomic bursts) when proper artillery techniques have

been employed. They assess casualties and damages resulting from hostile action against the unit to which assigned.

b. Among the functions observed and checked are the following:

- (1) *Planning and coordination.* The planning and coordination of fire support to determine if fire support is utilized to its maximum, the attack of targets is timely and the plan of fire support is in accordance with the maneuver of the supported unit.
- (2) *Intelligence.* The coordination of observation, counterbattery, and countermortar functions, and whether target information is aggressively collected from all available sources, evaluated and interpreted in time to permit the effective attack of the target.
- (3) *Fire Support Coordination Center.* Functioning of the Fire Support Coordination Center in carrying out its mission of insuring the efficient coordination and maximum employment of available fire power to include the integration of nonatomic fire support with atomic fire missions in support of the commander's scheme of maneuver.
- (4) *Fire Direction Center.* Maintenance of proper firing chart, registration, frequent metro messages, correct computations, and correct fire commands to the firing batteries.
- (5) *Ammunition Supply.* Adequate supply at the guns to execute missions, resupply plans, and action taken to effect resupply.

(6) *Communications.* Adequate communications from fire direction center to observers, to firing batteries, and to subordinate units.

44. Organization and Operation of Fire Marker Personnel

a. Ground or aerial fire marker teams are organized and equipped to mark simulated artillery, heavy mortar fire, and atomic bursts on United States and Aggressor positions during tactical exercises. Umpire personnel are normally used because these teams must be neutral. They mark fires of artillery, heavy mortar and atomic weapon units in the area of the opposing force.

b. A ground team normally consists of an artillery officer and a radio operator-driver. Personnel to operate sonic units must be included if this equipment is available for assignment to the fire marker teams. (These sonic units reproduce the sound of the incoming projectile and its detonation in the target area.) Two teams per artillery (including atomic weapon units) or heavy mortar battalion for marking fire and one team per division artillery or comparable headquarters for control are considered minimum requirements. In severe climates or in rough terrain additional fire marker teams may be necessary.

c. Each team requires a vehicle suitable for cross-country operations and a vehicular mounted radio. Sonic equipment normally requires an additional vehicle. Pyrotechnics and projectors used in marking fires are carried by the fire marker teams.

d. Pyrotechnics or other appropriate simulators are used to mark artillery and mortar fire at the

impact area. The signal, flash and sound, M-74 fired in the pistol M-8 or projector M-9 is used to simulate air bursts. The simulated hand grenades, simulators, shell burst ground, and other suitable pyrotechnics may also be used. The fire marker team gives shell report data to the personnel under fire.

e. The fire of one 105-mm battery is considered as effectively covering an area 50 yards in radius. Two or more batteries are considered as effectively covering an area 100 yards in radius. The above radii are increased 50 percent for the fire of 155-mm batteries.

f. Aerial fire marker teams should be used whenever possible and may be augmented by ground fire marker teams. Organization of aerial fire marker teams depends upon the type of aircraft to be used (par. 29). Aerial fire marker teams have the advantage of mobility and are especially desirable for marking fires deep in enemy territory or in locations not accessible to ground teams. These teams can increase the marked fires by as much as 50 percent. Smoke grenades or other suitable pyrotechnics are dropped in the target area from a radio equipped helicopter or liaison type aircraft. A card containing shell report data is attached by wire to the grenade (par. 45c(8)). A suitable atomic weapon simulator for maneuvers should be used when available. An airborne public address system, orbiting above the affected area or a vehicular mounted public address system, cruising in the affected area after the explosion, will aid in further impressing upon the individual soldier the results of an atomic explosion.

g. Fires must be marked promptly and accurately to be effective. Artillery commanders must accomplish the constant coordination necessary to insure the effective marking of their fires.

45. Fire Marker Channels of Communication and Control

a. A control team located at the fire direction center of the division artillery or artillery group controls all teams marking fires for the subordinate units. Requests for marking targets may be transmitted to the control team from the fire direction centers over the artillery communications system, or a separate radio net may be established for this purpose if desired. Communication between the control team and heavy mortar units must be provided if mortar fires are to be marked. The control team should maintain a chart or map showing the location of all fire marker teams at all times.

b. A separate fire marker radio net including the control team and all division artillery fire marker teams is established. The AN/GRC-5 or similar type radio is recommended for this net. The control team should organize the fire marker net and function as net control. Upon receipt of fire missions from the fire direction centers, the control team directs the fire marker team nearest the target to mark the fire.

c. An example of channels and procedures employed in the conduct of a fire mission follows:

- (1) A forward observer locates a target and reports its location to the battalion fire direction center.

- (2) The fire direction center alerts the guns and the control team.
- (3) The fire direction center sends the firing data to the guns.
- (4) The control team contacts the fire marker team nearest the target and directs it to mark the fire. Information as follows is given the fire marker teams:
 - (a) Location and description of target.
 - (b) Caliber of weapons firing.
 - (c) Number of rounds.
 - (d) Azimuth from target to guns.
 - (e) Type of fuze or fuze setting.
 - (f) Chemical agent, if used.
- (5) The fire marker team reports to the control team upon reaching the target.
- (6) The control team reports "ready" to the fire direction center and the guns are fired.
- (7) The control team reports "on the way" to the fire marker team when the guns have fired.
- (8) The fire marker team marks the target, furnishes data for shell reports to the troops fired upon as indicated in (4)(b) to (e) above, and reports "mission completed" to the control team. The officer with a ground fire marker team may assess casualties and damages if a unit umpire is not present.

d. When planning to have an atomic burst marked, the control team must notify ground and aerial fire marking teams.

46. Antiaircraft Umpires

Umpires assigned to antiaircraft units perform the following duties:

a. Battalion umpires supervise battery umpires and observe the overall tactical, technical, and administrative performance of the battalion.

b. Antiaircraft artillery umpires with batteries perform the following duties:

- (1) Observe and critique the tactical and technical performance of the antiaircraft units.
- (2) Assess and report losses inflicted on attacking aircraft by the units.
- (3) Observe security, reconnaissance, selection, and occupation of positions, preparation for action, and technical and tactical effectiveness.
- (4) Check for understanding and observance of conditions of readiness, rules of engagement, fire restrictions, and command control.
- (5) If the unit is attacked effectively by aircraft, the umpire may rule out an appropriate number of guns for a period not to exceed 4 hours.
- (6) When antiaircraft weapons are employed against ground targets in a direct fire role, their fires are marked in accordance with the provisions of paragraphs 44 and 45.
- (7) When antiaircraft weapons are employed in a direct fire role, in support of ground operations, assess and report losses.

Section V. SPECIAL OPERATION AND STAFF UMPIRES

47. The Airborne Umpire

Qualified airborne umpires assigned to airborne units follow the procedures contained in paragraphs 37 and 38. Airborne umpires are also located at departure airfields, landing fields, and drop zones within the airhead to observe and report upon the proficiency of airborne units in mounting and conducting an airhead operation, an air landed operation, or a logistical support operation by aircraft.

48. The Service Unit Umpire

The mission of the service unit umpire is basically the same as that for an umpire with a combat unit. The principal duties of a service umpire are—

- a.* To determine the effectiveness of security, cover, concealment, dispersion, camouflage, black-out, anti-aircraft defensive measures, area damage control measures, and other practices that may be necessary in actual combat.
- b.* To require observance of realistic time and space factors in performance of the unit mission.
- c.* To observe the location and operational efficiency of service installations.
- d.* To determine if the unit effects timely displacement forward with advance elements, and if continuous service is maintained during displacement.
- e.* To observe the adequacy and timeliness of information furnished the unit regarding the operations and plans of supported troops.
- f.* To assess losses in materiel and supplies when installations or movements are subjected to enemy action, and to follow up assessments of losses and

damage to ascertain if proper logistical reconstitution measures are taken. When damages to supplies which are essential to the well-being of any unit are assessed, such supplies should be released after a reasonable period.

g. To assess casualties and damages, including those from atomic weapons, and to enforce delays as warranted by hostile action.

49. Staff Umpires

Umpires at battalion and higher headquarters check the staff functioning and the operations of attached military intelligence teams and agencies. They observe the use made of available intelligence by the commander and staff, and its effect on the exercise. Checklists covering pertinent points are furnished by umpire group headquarters. Umpires should study SOP's of the unit they are umpiring, giving particular attention to the provisions dealing with atomic, chemical, biological, and electronic warfare.

50. Special Operations

a. In special operations such as Arctic, amphibious, and airborne, qualified personnel are assigned to the staff of the exercise director to assist in preparing the problem and to the umpire group to instruct the umpires in special techniques.

b. Umpires accompany groups who are assigned agent, guerilla, or infiltration missions.

51. Night Operations

a. Offensive. Umpires of night operations must be familiar with the plans and objectives of the unit and should make a daylight reconnaissance of the routes and objectives.

b. Defensive. The umpire must be familiar with the defensive fire plans, the withdrawal plan, the terrain, and signals to be employed.

52. Air Action

a. Duties of Air Umpires. Certain duties and responsibilities of air umpires are general and apply to any type of maneuver in which USAF units may participate. These are—

- (1) Deciding the results of contacts, taking into account the prevailing tactical factors such as control of the air, relative forces and fire power, surprise, and unit readiness for action.
- (2) Determining the results of air attacks on ground targets either by means of radar scoring unit, if available, or by reference to damage assessment tables.
- (3) Keeping the Chief Air Umpire and other unit air umpires informed by timely reports of the results of plans of maneuver unit commanders and movements, actions, and dispositions of Air Force maneuver units and installations.
- (4) Focusing the attention of all participating personnel on the training aspects of maneuver play, rather than the achievement of a fictitious "victory" or "defeat"—guiding, where necessary, the development of situations so as to avoid this latter tendency.

b. Coordination of Air and Ground Umpire Functions.

- (1) In any maneuver involving both air and ground action, many situations will arise in

which air and ground operations interact with each other. In these cases the normal functions of air umpires tend to overlap with those of ground umpires. Therefore, it becomes necessary to assign specific umpiring responsibilities to air and ground umpires. The following constitutes a general guide:

- (a) Each umpire will judge certain phases of air operations. Where damage assessment is made by other than air umpires, the air umpire involved will make an evaluation of other aspects of the attack and include it in the air umpire's final report. Where an air umpire is present on the ground and a ground umpire is present, the following system can be used:
 1. A common frequency must be available to battalion umpires and air control team umpires with the battalion. A second frequency must be available between those air umpires who are flying and those who are on the ground with air control teams.
 2. When an immediate or preplanned mission is requested, information will be relayed to opposing forces through the assistant battalion umpire, temporarily located with Aggressor. The information will include the number and type of aircraft, armament, coordinates of target, and time of arrival at target.

3. Upon receipt of information from the assistant battalion umpire, the battalion umpire will notify the umpire of the unit in the target area. This may be a subordinate unit within the battalion or a higher headquarters depending on the proposed target.
4. At the time of the strike, the umpire with the unit marks the strike with a smoke grenade. He makes an estimate of casualties and damages and forwards them to the battalion umpire.
5. The air umpire flying with the strike notifies the air control team umpire of his estimates of casualties and damages. The battalion umpire with the advice of the air control team umpire will correlate the claims and make a final assessment of casualties and damages. This information will be relayed to the unit through ground umpire channels and to the air unit through Air Force channels.
6. In those cases where the assistant battalion umpire is not located with the Aggressor unit and Aggressor calls for an air strike, information indicated above will be provided from Aggressor headquarters to umpire headquarters thence down to the battalion umpire involved.

(b) In airborne operation, ground and air umpires will judge their respective components throughout the maneuver. Cas-

ualties to aircraft and crews will be assessed by air umpires, and casualties to airborne elements will be assessed by ground umpires, if appropriate. Any casualties to airborne elements will be restored prior to reaching the drop zone.

(c) Coordination of "Out of Action" will be prescribed by the chief army umpire for ground equipment and the chief air umpire for aircraft and related Air Force equipment.

(2) Air Umpire. The air umpire will umpire the following:

(a) All air-to-air contacts. Damage will be assessed in accordance with damage assessment tables.

(b) All troop carrier responsibilities in the airborne assault or logistic support.

(c) Effectiveness of each air attack, both air-to-air and air-to-ground, expressed in percentage. Where air-to-ground targets are involved, the air umpire with a flight transmits to umpire operations through air umpire channels the following information prior to takeoff:

1. Time of takeoff.

2. Estimated time of arrival at target.

3. Number and type of aircraft.

4. Type of armament.

5. Mission and specific targets.

6. Chemical agent, if used, and dosage—area covered.

(d) All aerial reconnaissance missions, both visual and photographic.

- (e) Damage by hostile attack to airbases and aircraft on airbases.
- (f) Operation of the air control center.
- (g) Logistic support by aircraft include:
 1. The appropriateness of directives issued for bringing air supply items to loading points.
 2. Preparation of loading plans, effectiveness of combat loading, and adequacy of aircraft provided.
- (3) Army Umpire. The Ground umpire will umpire the following:
 - (a) In airborne operations, the preparation for emplaning and the efficiency of loading plans in supporting tactical requirements of airborne forces, the actual "jump", and operations of the airborne force thereafter.
 - (b) Damage to ground targets by attacking aircraft provided such information is not supplied by the air umpire participating in the attack.
 - (c) Damage to attacking aircraft by ground defenses.
 - (d) When an air attack on ground targets includes the use of an atomic weapon, the casualty and damage assessments are made by the unit umpire as indicated in paragraph 32a. Air Staff Umpires will notify Umpire Headquarters of the planned attack.
 - (e) Utilization and efficiency of logistical support by air.

Section VI. RECORDS AND REPORTS

53. Troop Location Reports

Prompt and accurate reports are the foundation of umpire control. Although unit umpires down to and including those assigned units of company level submit periodic reports as prescribed by the Chief Umpire, important changes in the situation or location of units should be submitted without delay in the form of special reports. Such reports should normally include the unit designation, location of the command post, current mission or employment, and any additional information pertaining to the current situation. For example: Company A, 321st Infantry 98402450, occupying defensive position along BIG CREEK from 98302462 to 98702445.

54. Daily Report

A daily report on unit operations will be prepared by all unit umpires and submitted to the Chief Umpire through umpire channels of command. The report will cover a period of 24 hours. The period to be covered, the time of submission and any special comments or recommendations desired will be prescribed by the Chief Umpire. An example of a daily report is shown in figure 2.

55. Artillery Control Forms

Fire marker teams and fire marker control teams will keep a record of artillery fires and atomic bursts. This record will be kept on a form similar to the artillery control log maintained at artillery fire direction centers.

HEADQUARTERS UMPIRE GROUP
EXERCISE _____

DAILY UMPIRE REPORT

5 May 1952

Date

For period: 041200 May to 051200 May

Unit Umpired: Company A, 321th Infantry

Location of front lines at close of period:

(Pidcock sheet, 1:50,000) From 543628 to 544627

Location of unit CP (if applicable) Pidcock sheet, 1:50,000, 518620

Umpired by Jones, John A. Capt, Infantry

1. a. What was the primary mission of the unit during the period? (Give summary of operations)
Attack and seize high ground vicinity Pidcock (542626). Continue attack and seize crossing over Lampass River (546627) upon order. (Unit attacked 050000 and by 051145 had seized initial objective. Immediate plans were made for defense against counterattack. Unit now preparing to continue attack toward objective2).
b. What pertinent tactical or administrative problems arose which affected the manner in which the unit carried out its mission?
None
b. None
2. Comment on the manner in which the unit accomplished its mission and handled concurrent problems. Explain what the primary factors were which contributed to the success or failure of the mission, e.g., tactics, command, supply, unit training to include chemical and atomic, individual training to include chemical and atomic, intelligence leadership.

TACTICS: Plan well prepared, orders clear and complete, execution of maneuver conformed exactly with plan. Advantage taken of covered routes of approach, use of cover and concealment was excellent, dispersion excellent. Defense of objective, following capture, was well planned and timely.

Figure 2. Sample daily umpire report.

COMMAND: Unit commander continuously kept well forward and maintained control of all elements through all means of communication. Confident and firm in issuing orders and making decisions, displayed constant concern for welfare of men.

SUPPLY: Basic loads were complete. All commanders took positive action to replenish other supply shortages.

UNIT TRAINING: Coordination between units, employment of supporting weapons and speed with which orders were carried out indicated excellent training.

INDIVIDUAL TRAINING: Individual weapons in excellent condition, proper sight settings, good dispersion and camouflage discipline.

INTELLIGENCE: Individuals very security conscious. POWs promptly searched and segregated, captured documents immediately forwarded.

3. Casualties assessed during period:

a. Personnel 4 Dead, 7 Seriously wounded, 8 slightly wounded

b. Major items of equipment: one 1-ton 4x4 vehicle totally destroyed.

4. Other remarks: My driver Pvt Doe injured in fall and evacuated to 22d Field Evac. Hosp. Incident occurred 1900 hours 04 May at coor. 543628.

Figure 2—Continued.

CHAPTER 4

FIRE POWER AND LOSS ASSESSMENT

Section I. FIRE POWER

56. Fire Power

a. A unit or element thereof should be permitted to advance only after the umpire has carefully considered the tactical factors involved (pars 31 and 32). One of these factors is fire power. In order to establish a basis for computing fire power in a tactical exercise, a numerical rating is assigned each weapon. The numerical rating, or fire power score, for a particular weapon is based on the type, caliber, range, and effectiveness of that weapon in comparison with other weapons (par. 57). The fire power of a unit may be computed as shown in paragraph 58. In addition, fire power must be associated with maneuver as indicated in *c* below. A simple infantry fire power computer, applicable to both United States and Aggressor fires, for use by unit umpires is described in appendix V. The effects of an atomic burst are calculated by the staff officers of the special weapons subsection at Umpire Headquarters (app. II, par. 8e).

b. A combat element should be permitted to advance only when it has decisive superiority of fire.

This superiority should seldom be less than 2 to 1 and generally should be 3 or 4 to 1. If the defender has good cover and fields of fire, there should be no hesitation in requiring a superiority of 5 to 1 or even more. In a surprise flank attack, the defender may fail to use his fire power completely, may be so disposed that he cannot use it, or may be unable to control and coordinate it properly. In such a case the attacker may be permitted to advance with a nominal or apparent fire power no greater than that of the defender. Applied fire power—that is, fire power actually brought to bear on the opposing force—is the principal basis for the umpire's decisions.

c. In tactical exercises advantages of maneuver may be recognized by awarding premiums for maneuver as follows:

- (1) The *actual* fire power score, based on weapons involved, to a unit in a frontal attack.
- (2) *Twice* the actual fire power score if the unit attacks by fire and also maneuvers a portion of its force to strike the opposing force other than frontally.
- (3) *Three* times the actual fire power score if a unit makes a coordinated attack after having maneuvered a portion of its force to strike the flank or rear of the opposing force.

57. Fire Power of Weapons

The following fire power scores are assigned to United States and Aggressor weapons when firing at the ranges indicated:

Table I. Fire Power of Weapons

Weapons	300 yds	500 yds	700 yds	900 yds	1,100 yds	1,300 yds	1,500 yds	Over 1,500 yds
Gun, 90-mm-----	15	15	15	15	15	15	15	15
Gun, 80-mm-----	15	15	15	15	15	15	15	15
Gun, 75-mm or 76-mm-----	15	15	15	15	15	15	15	15
Mortar, 4.2 inch-----	15	15	15	15	15	15	15	15
Mortar, 81-mm-----	12	12	12	12	12	12	12	12
Mortar, 60-mm-----	6	6	6	6	6	6	6	---
Rifle, 75-mm Recoilless-----	15	15	15	15	15	15	15	15
Rifle, 57-mm Recoilless-----	10	10	10	10	10	10	10	10
Rifle, Cal .30 Browning Automatic-----	3	3	1.5	1.5	-----	-----	-----	-----
Rifle, Cal .30 M1-----	1	1	.5	.5	-----	-----	-----	-----
Carbine, Cal .30-----	1	.5	-----	-----	-----	-----	-----	-----
Machinegun, Cal .50 Heavy-----	10	10	10	10	10	10	10	10
Machinegun, Cal .30 Heavy-----	10	10	10	10	10	10	10	---
Machinegun, Cal .30 Light-----	6	6	6	6	6	3	3	---
Submachinegun, Cal .45-----	3	(¹)	-----	-----	-----	-----	-----	-----
Rocket Launcher 3.5 in-----	6	6	6	6	-----	-----	-----	-----
Rocket Launcher, 2.36 inch-----	6	6	6	-----	-----	-----	-----	-----

¹ Up to 100 yds.

Table 1. *Fire Power of Weapons*—Continued

Weapons	300 yds	500 yds	700 yds	900 yds	1,100 yds	1,300 yds	1,500 yds	Over 1,500 yds
120 & 150-mm Mor-tars-----	20	20	20	20	20	20	20	20
105-mm Howitzer-----	20	20	20	20	20	20	20	20
150 & 180-mm How-itizers-----	25	25	25	25	25	25	25	25
75 & 80-mm Pack Howitzers-----	15	15	15	15	15	15	15	15
106-mm Recoilless Rifle-----	20	20	20	20	20	20	20	20
105 & 120-mm TK & AT Guns-----	20	20	20	20	20	20	20	20
40-mm Gun Dual Mtd-----	16	16	16	16	16	16	16	16
M6 Cal .50 Quad Mtd-----	40	40	40	40	40	40	40	40

58. Fire Power of Units

a. Because of the time element involved, it is often impracticable for an umpire to tabulate the fire power of all weapons individually. Therefore, it is more desirable to determine the collective fire power of each unit prior to the start of the exercise so that the umpire can readily compare the fire power of opposing units. Unit umpires must maintain an accurate record of effective fire power at all times. To accomplish this, he must adjust the initial fire power of the unit involved by the percentage of the unit's losses as well as its replacements.

b. The fire power score of any unit can be determined by adding the fire power score of each of the

organic weapons of the unit. In order to simplify initial computations of fire power, the Exercise Director may authorize that the collective fire power score of all similar type units be based on 100 percent TOE weapons or on the average number of authorized weapons on hand. Otherwise, the collective fire power score of a unit will be based on the organic weapons actually in the unit. The initial fire power scores for participating units should be reproduced for use of the umpires. For simplicity, unit fire power scores should be expressed in multiples of 10. The fire power score of attached or supporting units should be added to that of the supported unit. Only those units actually engaged in the fire fight or in position to support the attack, will be considered. The total fire power of a unit is reduced during the operations by accumulated losses. The computation of losses is discussed in paragraphs 67 through 77.

c. The fire power scores of United States infantry units based on 100 percent of authorized weapons are as follows: (Actual computations are shown in parentheses). This chart illustrates the use of fire power scores of individual weapons (par. 57) to obtain unit fire power scores. (See app. V for computer.)

Table II. Fire Power—United States Infantry Battalion

Unit	300 yds	500 yds	700 yds	900 yds	1,100 yds	1,300 yds	1,500 yds	Over 1,500 yds
Battalion.....	775 (774)	775 (774)	610 (612)	610 (612)	430 (432)	390 (387)	390 (387)	290 (286)
Rifle Company.....	190 (102)	190 (192)	140 (138)	140 (138)	80 (78)	65 (63)	65 (63)	30 (30)
Rifle Platoon.....	50 (48)	50 (48)	30 (30)	30 (30)	10 (12)	5 (6)	5 (6)	-----
Rifle Squad.....	10 (12)	10 (12)	5 (6)	5 (6)	-----	-----	-----	-----
Weapons Squad.....	10 (12)	10 (12)	10 (12)	10 (12)	10 (12)	5 (6)	5 (6)	-----
Weapons Platoon.....	50 (48)	30 (30)						
60-mm Mortar Section.....	20 (18)	-----						
57-mm Recoilless Rifle Section.....	30 (30)							
Heavy Weapon Company.....	200 (198)							
Machinegun Platoon.....	40 (40)							
Antitank Platoon.....	110 (110)							
Mortar Platoon.....	50 (48)							

Table III. Fire Power—United States Armored Infantry Battalion

Unit	300 yds	500 yds	700 yds	900 yds	1,100 yds	1,300 yds	1,500 yds	Over 1,500 yds
Battalion.....	800 (800)	800 (800)	610 (611)	610 (611)	420 (422)	345 (344)	345 (344)	265 (26)
Headquarters & Service Co.....	150 (152)	150 (152)	140 (143)	140 (143)	135 (134)	130 (128)	130 (128)	120 (122)
Reconnaissance Plat.....	90 (92)	90 (92)	80 (83)	80 (83)	70 (74)	70 (68)	70 (68)	60 (62)
Scout Section.....	20 (20)	20 (20)	15 (16)	15 (16)	10 (12)	5 (6)	5 (6)	-----
Tank Section.....	50 (50)							
Rifle Squad.....	10 (10)	10 (10)	5 (5)	5 (5)	-----	-----	-----	-----
Support Squad.....	10 (12)							
Mortar Platoon.....	60 (60)							
Rifle Company.....	160 (162)	160 (162)	105 (117)	105 (117)	70 (72)	55 (54)	55 (54)	35 (36)
Rifle Platoon.....	40 (42)	40 (42)	30 (27)	30 (27)	10 (12)	5 (6)	5 (6)	-----
Rifle Squad.....	10 (10)	10 (10)	5 (5)	5 (5)	-----	-----	-----	-----
Weapons Squad.....	10 (12)	10 (12)	10 (12)	10 (12)	10 (12)	5 (6)	5 (6)	-----
Mortar Platoon.....	35 (36)							

Table IV. Fire Power—United States Airborne Infantry Battalion

Unit	300 yds	500 yds	700 yds	900 yds	1,100 yds	1,300 yds	1,500 yds	Over 1,500 yds
Battalion.....	720 (720)	720 (720)	585 (585)	585 (585)	450 (450)	395 (396)	395 (396)	290 (228)
Rifle Company.....	175 (174)	175 (174)	130 (129)	130 (129)	85 (84)	65 (66)	65 (66)	30 (30)
Rifle Platoon.....	40 (42)	40 (42)	25 (27)	25 (27)	10 (12)	5 (6)	5 (6)
Rifle Squad.....	10 (10)	10 (10)	5 (5)	5 (5)
Weapons Squad.....	10 (12)	10 (12)	10 (12)	10 (12)	10 (12)	5 (6)	5 (6)
Weapons Platoon.....	50 (48)	30 (30)						
60-mm Mortar Section.....	20 (18)						
57-mm Recoilless Rifle Sec.	30 (30)							
Heavy Weapons Com- pany.	200 (198)							
Machinegun platoon.....	40 (40)							
Antitank Plat.....	110 (110)							
Mortar Platoon.....	50 (48)							

d. Armament of Aggressor units is listed in FM 30-102. In computing the fire power scores for these units, only those weapons that normally engage in fire fights are considered. As in the computation for United States units, the weapons carried by leaders, headquarters personnel, and individual weapons carried by weapons crews are not counted.

e. The fire power scores of Aggressor rifle units based on *d* above are as in tables V through VII.

Table V. Fire Power—Aggressor Rifle Battalion

Unit	100 yds	300 yds	500 yds	700 yds	900 yds	1,100 yds	1,300 yds	1,500 yds	over 1,500 yds
Battalion.....		695 (693)	695 (693)	560 (558)	560 (558)	425 (423)	425 (423)	425 (423)	110 (108)
Rifle Company.....		120 (120)	120 (120)	75 (75)	75 (75)	30 (30)	30 (30)	30 (30)
Rifle Plat.....		30 (30)	30 (30)	15 (15)	15 (15)
Rifle Squad.....	15 (13)	10 (10)	10 (10)	5 (5)	5 (5)
MG Co.....		90 (90)						
MG Plat.....		30 (30)						
MG Sq.....	15 (13)	10 (10)						
Lt Mort Co.....		110 (108)							
Mort Plat.....		35 (36)							
AT Co.....		135 (135)						
AT Plat.....		45 (45)						

Table VI. Fire Power—Aggressor Mechanized Battalion

Unit	300 yds	500 yds	700 yds	900 yds	1,100 yds	1,300 yds	1,500 yds	Over 1,500 yds
Battalion*.....	630 (628)	630 (628)	395 (393)	395 (393)	260 (258)	260 (258)	260 (258)	110 (108)
Rifle Co.....	90 (90)	90 (90)	45 (45)	45 (45)
Rifle Plat.....	30 (30)	30 (30)	15 (15)	15 (15)
Rifle Sq.....	10 (10)	10 (10)	5 (5)	5 (5)
MG Co.....	90 (90)						
MG Plat.....	30 (30)						
Mort Co.....	110 (108)							
Mort Plat.....	35 (36)							
AT Co.....	60 (60)						
AT Plat.....	30 (30)						

*Note. This battalion is found in mechanized rifle regiments and the medium tank regiment of mechanized divisions, and in the motorized rifle regiment and the medium tank regiments of tank divisions.

59. Effect of Artillery on Fire Power

a. Effective counterbattery fire neutralizes opposing artillery units for the duration of the concentration and for a limited time after the fire has ceased.

b. Artillery fire neutralizes the fire power of infantry troops within the impact area (par. 44) for the duration of the fire.

c. An atomic burst neutralizes the fire power, artillery or infantry, in accordance with the percent casualty and damage effects indicated on the "effects overlay," (app. VII) and later assessed by the unit umpire.

Table VII. Fire Power—Aggressor Airborne Rifle Battalion

Unit	100 yds	300 yds	500 yds	700 yds	900 yds	1,100 yds	1,300 yds	1,500 yds	Over 1,500 yds
Battalion.....	830 (828)	830 (828)	795 (693)	650 (648)	425 (423)	335 (333)	335 (333)	110 (108)	
Rifle Co.....	165 (165)	165 (165)	120 (122)	105 (105)	30 (30)	-----	-----	-----	
Rifle Plat.....	40 (39)	40 (39)	25 (24)	15 (15)	-----	-----	-----	-----	
Rifle Sq.....	20 (19)	15 (13)	15 (13)	10 (8)	5 (5)	-----	-----	-----	
50-mm Mort Plat.....	20 (18)	20 (18)	20 (18)	20 (18)	-----	-----	-----	-----	
MG Co.....	90 (90)	-----							
MG Plat.....	30 (30)	-----							
80-mm Mort Co.....	110 (108)								
Mort Plat.....	35 (36)								
AT Co.....	135 (135)								
AT Plat.....	45 (45)								

60. Effect of Tank and Self-Propelled Guns on Infantry Fire Power

Observed fire of tank or self-propelled guns neutralizes the fire power of dismounted troops and all other fire power not located in armored vehicles or completed bunkers, for the duration of the observed fire. Neutralization should be limited to area being fired upon; other troops should continue to fire.

61. Effect of Ground Weapons Against Armor

a. The following ground weapons are considered effective against armored vehicles at ranges indicated:

Table VIII. Effect of Ground Weapons Against Armor

Weapons and ammunition	Maximum effective range (yds)		
	Scout cars and gun carriers	Light tanks, self-propelled guns, full track armd. inf. veh.	Medium tanks
Caliber .50 AP-----	500	-----	-----
57-mm, Gun, AP; 57-mm Recoilless Rifle HEAT.	800	^a 800	-----
40-mm AA Gun AP-----	1,000	400	^b 400
75-mm or larger Gun, Howitzer, or Recoilless Rifle, AP, HE, or HEAT.	1,000	1,000	^c 1,000
3.5" Rocket-----	200	200	200
Rifle and Grenade Launcher Antitank Grenade.	^d 75	^d 75	-----
106-mm Recoilless Rifle-----	1,700	1,700	1,700
Atomic Bursts ("See effects overlay").	-----	-----	-----

^a Hits at this range will not destroy but may immobilize.

^b Flank and rear only.

^c 75-mm not effective against medium tanks.

^d Not effective against moving targets at ranges over 50 yards.

b. Unarmored vehicles are vulnerable to all weapons within effective range.

c. Atomic burst effects on armor will be furnished by the umpire, after referring to his "effects overlay."

62. Fire Duels

a. Fire duels at great range are difficult to umpire. Losses are assessed only when, in the opinion of the umpire, a fair decision can be made (par. 39). Guns of vehicles in motion are effective only when equipped with gyrostabilizers and then the effectiveness is 25 percent of a stationary gun of the same type.

b. Guns of comparable size are scored on the basis of position as follows:

- (1) Ground gun behind natural or artificial cover—3.
- (2) Vehicular-mounted gun (armored) behind natural or artificial cover—4.
- (3) Ground gun unprotected by natural or artificial cover—2.
- (4) Vehicular-mounted gun (armored) unprotected by natural or artificial cover—3.

c. Guns must be laid accurately on the targets. If blank ammunition is not available, a red flag must be waved to simulate firing.

d. A collective score method may be used if the number of guns and/or vehicles engaged in the fire duel is sufficient to render the foregoing method of scoring impracticable. The umpire determines the total score of each side and rules all or a portion of the weaker side destroyed. Terrain, tactical employment, and duration of the action are considered. Losses to the stronger side are assessed in the inverse ratio of the total scores. *Example:* United States score, 40; Aggressor score, 30; twenty Aggressor vehicles ruled destroyed; three-fourths of 20, or 15 of the United States vehicles ruled destroyed.

e. When tanks maneuver against tanks, the losses are computed in the inverse ratio of participating tanks of the opposing forces. A medium tank is considered the equivalent of $1\frac{1}{2}$ light tanks. *Example:* United States, 10 medium and 15 light tanks; Aggressor, 20 light tanks; losses are computed in the ratio of two United States tanks to three Aggressor Tanks.

f. When necessary to stop an armored fire duel to make a decision as to the results, the umpire displays a blue flag.

63. Mines and Booby Traps

a. To receive credit for casualties or damages resulting from the simulated explosion of practice mines or booby traps, each such mine or booby trap must have been properly emplaced and armed. This restriction may be obviated if practice mines are not available for the exercise; however, any substitution that is used must be played logically.

b. In addition to properly emplacing and arming individual mines, mine fields must be properly marked, recorded, and reported before the umpire can give the unit credit for the mine field.

c. If practice mines are not available and substitutes are used, umpires should be furnished the following data by the Engineer Section of Umpire Headquarters so that they can estimate the logistical requirements. This data should be furnished for each type of mine supposedly available. The transportation, manpower, and time must be available to meet the umpire's logistical calculation for the unit to receive credit for the substitute mine field.

- (1) Number of mines per package.
- (2) Weight of individual mines and of package of mines.
- (3) Number of mines per 2½-ton truck with 1½-ton trailer.
- (4) Number of mines per 2½-ton dump truck.
- (5) Pounds of explosive per mine.
- (6) Capabilities.
 - (a) AP Mines—Effective causality radius.

(b) AT Mines—Types of vehicles and extent of damages.

(7) Average time to emplace.

d. Casualty assessments.

(1) When simulated mines with live fuses are used, the umpire should assess casualties in the following ways:

(a) For pressure actuated AP mines, only the man who actuates the mine is assessed a casualty.

(b) For a trip wire actuated AP mine within a radius of 10 yards, men are assessed as casualties and mine detectors are assessed as damaged.

(c) For a pressure actuated AT mine, personnel within a radius of 15 yards are assessed as casualties and all mine detectors are destroyed.

(2) When manually breaching a mine field containing AP and AT mines, the following may be used:

(a) Assess one casualty per 50 yards of depth when United States Forces manually breach a two lane path 8 feet wide, one casualty per 100 yards of depth when breaching a one lane path 4 feet wide, and two casualties per 50 yards of depth when breaching one 8 yard vehicle lane.

(b) If mine field is covered with Aggressor fire, casualty assessment will be higher.

(3) When hasty breaching by tank or infantry waves is used, tables IX through XI may be used as guides in assessing casualties:

Table IX. Personnel Casualties in Percent

AP mine density per yard

Wave	24	20	16	12	8	4	2
1	80	70	60	50	40	30	20
2	70	60	50	40	30	20	10
3	60	50	40	30	20	10	—
4	50	40	30	20	10	—	—
5	40	30	20	10	—	—	—
6	30	20	10	—	—	—	—
7	20	10	—	—	—	—	—
8	10	—	—	—	—	—	—

Note. Rates increase with poor visibility and decrease with poor camouflage.

Table X. Tank Casualties in Percent

AT mine density per yard

Wave	3	2	1	0.5	0.2
1	90	80	60	30	10
2	60	50	40	10	—
3	40	30	20	—	—
4	20	10	—	—	—

Note. Rates increase with poor visibility and decrease with poor camouflage.

e. Time required to breach minefields.

- (1) When the Aggressor minefields comprise practice or simulated mines, the United States troops are required to actually breach the minefield using approved techniques.
- (2) When the Aggressor minefield is a simulated field, the time required for breaching can be calculated from table XI.

Table XI. Mine Field Breaching Data

Activity	Average rate	Probable casualties from mines
Breach and mark (tracing tape) a 3'-5' path through the entire field, marking AT mines and hand neutralizing all AP mines encountered.	50 yards per hour (flat, open terrain, some tall grass).	1 per 100 yards of depth.
Breach and mark (tracing tape) two 3'-5' paths 8 yards on either side of and parallel to center line, marking AT mines and hand neutralizing AP mines.	50 yards per hour (terrain as above).	1 per 50 yards of depth.
Breach and mark an 8 yard vehicular lane, marking AT mines and hand neutralizing mines.	50 yards per hour (terrain as above).	2 per 50 yards of depth.
Uncover and remove by rope all AT and AP mines previously marked by above parties.	5 min. per man per mine.	25% of rates shown above for breaching and marking (due mainly to undetected and unmarked small nonmetallic mines).

64. Chemicals

a. Smoke and other nontoxic chemicals may be employed for training purposes in tactical exercises.

b. Smoke on either a unit or a target reduces the firepower of the unit. The firepower of an infantry unit is reduced 50 percent if the unit itself is under smoke and 25 percent if the target is covered by an effective smoke concentration. The effect of observed artillery fire on targets covered by smoke is reduced 25 percent. Antitank fire is ineffective against targets that are concealed by smoke.

c. Personnel in chemically contaminated areas are required to wear protective masks. Firepower of personnel wearing protective masks is reduced 10 percent. The firepower of a unit is neutralized during delivery of a chemical agent upon the unit.

d. The dissemination of toxic chemical agents by ground weapons or bombs is represented by igniting

colored smoke grenades in the impact area as in marking artillery fire.

- (1) Persistent chemical agents will be marked in the impact area by two colored smoke grenades for each 100 yard square covered.
- (2) Nonpersistent chemical agents will be marked in the impact area by two CN (tear gas) and two colored smoke grenades for each 100 yard square covered.

Note. Different colored smoke grenades should be used for persistent and nonpersistent agents. In exercises in which air landings or air drops are conducted, some other means of marking chemical agents must be used. (See par. 35.)

e. Airplane spray will mark areas through the characteristics of the spray which are as follows:

- (1) Persistent agents—actual spray of MR (molasses residuum).
- (2) Nonpersistent agents—actual spray of CN (tear gas) solution.

f. Tactical use of smoke will be marked by smoke produced by smoke pots or mechanical smoke generators. Effectiveness of tactical smoke will be assessed according to the actual area covered.

Section II. CAPTURE OF PERSONNEL AND MATERIEL

65. Capture of Personnel

a. The capture of United States Force personnel provides added realism and also imposes a penalty on the unit by reducing its operational effectiveness. All Aggressor troops are subject to capture. Selected Aggressor personnel may be injected into the

exercise for capture by the United States Force as a part of the intelligence play and to provide training in the proper methods of prisoner-of-war processing and interrogation. These prepared prisoners are trained in interrogation techniques, provided with an Aggressor background story, and given information of intelligence value to release when captured and properly interrogated (FM 30-104).

b. Prisoners of war must be guarded properly to prevent escape but are required to respect traced inclosures as actual and to conduct themselves as they would in an actual situation under guards armed with live ammunition.

c. The Chief Umpire should arrange for frequent exchanges of prisoners to avoid keeping too many men out of training.

d. When an entire unit or the major portion thereof has been captured, the umpire may authorize the retention of selected individuals as prisoners of war, and direct that the remainder of the captured personnel be moved to a designated location and remain out of action for a specified period of time. In such cases, Aggressor prepared prisoners should make themselves known to the umpire so they can be designated for retention as prisoners of war to be processed.

e. Prisoners of war will retain their personal property, individual weapons, and equipment during processing. The capturing or holding unit must provide rations and emergency medical care for prisoners of war as required.

66. Capture of Installations and Materiel

a. Installations.

- (1) Evacuation and surgical hospitals, clearing stations, collecting stations, and aid stations which may be captured by either side are returned to parent units as soon as practicable.
- (2) Depots, supply points, railheads, distributing points, and dumps captured by either side are ruled out of action for the duration of the exercise or such other period as determined by the Chief Umpire.

b. Materiel.

- (1) Vehicles, weapons, pneumatic equipment, and sonic equipment (except that with fire marker teams) are subject to capture except as noted in (2) below and must be processed with their drivers and crews to avoid loss or damage to government property and prevent confusion. Vehicles and weapons ruled captured may be held in place out of action for a designated period of time or they may be dispatched to a prisoner-of-war installation and held there for the period of time designated by the umpire. At no time will the driver or crew be separated from the vehicle.
- (2) Ambulances, kitchen trucks, ration trucks, and mail trucks that may be captured are returned to parent units without delay.
- (3) Cargoes of vehicles processed with prisoners remain with the vehicles. Transfer to other vehicles is prohibited except that gasoline

and blank ammunition may be taken by the capturing unit.

Section III. CASUALTY AND DAMAGE ASSESSMENT

67. General

a. All losses that affect the progress of action such as casualties in combat and service units, and destruction or capture of equipment, supplies, and installations are considered in umpiring.

b. Platoon and company umpires keep a running record of losses assessed against the units to which they are assigned. They periodically inform the respective platoon leader and company commander of accumulated losses.

c. The fire power of a unit is reduced by the accumulated losses assessed against the unit (par. 58).

d. The number of assessed personnel casualties to be tagged and evacuated through medical channels as casualties depends upon the strength and capabilities of participating units and personnel. Generally, individuals selected for evacuation are those who unduly expose themselves. Personal property, individual weapons, and equipment are retained by the individual.

e. The losses to be assessed as a result of enemy action are a matter of judgment. The relative strength of the opposing forces is an important factor. Casualties and damages assessed as a result of an atomic burst may be such as to eliminate the unit, installation, or activity. These losses can be expected and must be played realistically. Paragraphs 68 through 73 contain data to be used as a guide.

68. Assessment of Personnel Casualties

a. The assessment of casualties imposes a penalty on combat units by reducing their effective strength and provides training for medical personnel. Casualties evacuated to and released from the division clearing station mobile surgical hospital, or graves registration section are sent to the division replacement company and returned to their units through replacement channels. Casualties assessed by unit umpires are tagged as they are assessed. The tag should show the name, the status (as "walking wounded" or "litter case"), and the specific nature of the wounds (par. 69). Appropriate medical care is simulated as the casualty moves to the rear through medical channels.

b. In assessing casualties, the following ratios of killed to wounded may be used as a guide: (For additional information on casualties, see chapter 2, FM 101-10.)

	<i>Killed</i>	<i>Wounded</i>
Tank elements-----	2	7
Artillery elements-----	1	4
Infantry elements-----	1	4
All other ground force elements-----	1	4

c. In assessing atomic casualties involving considerable numbers, the unit umpire notifies the unit commander of the percentage to be evacuated. The simulated casualties to be evacuated should include a cross representation of the command.

d. Atomic casualties should be processed through evacuation channels:

- (1) To impress upon the commander and his command the crippling effect of an atomic detonation upon a unit.

(2) To give the evacuation channels training in handling large numbers of casualties in a short period and to impress on them the magnitude of their task.

69. Casualty Tags

(fig. 3)

a. Walking Wounded. A green card bearing the words "Walking Wounded. Proceed to your unit aid station for evacuation."

b. Litter Case. A red tag bearing the words "Litter Case. Remain in place until picked up and evacuated by litter bearers. You may call for aid men."

c. Dead. A white card bearing the words "Dead. The Division graves registration section will pick you up, evacuate, and process you. Upon completion of action by graves registration section, you will be returned to your unit through replacement channels."

70. Infantry Unit Casualty Assessment

Assessment of casualties against an infantry unit (from other than atomic weapons) in any 1 day of severe combat should seldom exceed 15 percent. This percentage should be considered in computing the total number of casualties to be assessed against rifle companies. The following percentages of losses may be used as guides in assessing casualties under each of the conditions described:

a. Fire by Opposing Infantry. One to three percent per hour. (Consider relative strength, positions, and dispositions of the opposing forces and whether a unit is attacking or defending.)

(GREEN COLOR)

WALKING WOUNDED
NATURE OF WOUND:

PROCEED TO YOUR UNIT AID STATION
FOR EVACUATION

(RED COLOR)

LITTER CASE
NATURE OF WOUND:

REMAIN IN PLACE UNTIL PICKED UP AND
EVACUATED BY LITTER BEARERS YOU
MAY CALL FOR AID MEN

(WHITE COLOR)

DEAD

THE DIVISION GRAVES REGISTRATION
SECTION WILL PICK YOU UP, EVACUATE AND
PROCESS YOU UPON COMPLETION OF
ACTION BY GRAVES REGISTRATION SECTION
YOU WILL BE RETURNED TO YOUR UNIT
THROUGH REPLACEMENT CHANNELS

Figure 3. Personnel casualty tag.

b. Artillery Concentrations.

Erect-----	1% per battery volley.
Running-----	1% per battery volley.
Prone-----	$\frac{1}{3}\%$ per battery volley.
Entrenched-----	$\frac{1}{20}\%$ per battery volley.
In trucks-----	1% per battery volley.

c. Mortar Fire. Eight rounds of light or medium mortar (60- or 81-mm) or 6 rounds of heavy mortar (4.2 in.) are considered equivalent to a battery volley of artillery.

d. Overrun by Tanks or Self-Propelled Guns.

- (1) Elements within 100 yards of any tank or self-propelled guns and not entrenched—3 percent per tank or 2 percent per self-propelled gun per attack.
- (2) As (1) above, but entrenched or in fox-holes—1 percent per tank or self-propelled gun per attack.

e. Chemical and Biological Attack. Losses from chemical and biological attack are indicated separately from other losses. The factors listed below can be applied to troops with consideration given the condition and status of the troops with reference to degree of exposure.

- (1) *Chemical losses.* Casualties are computed by means of the "Chemical Casualty Computer" (app. VI).
 - (a) These casualties may be broken down as follows:

Nonpersistent Gases (G)

Surprise, poor gas discipline; totally unprepared; or unprotected.	Killed 75%, litter 15%, walking wounded 10%.
No surprise, good gas discipline; or surprise, good gas discipline.	Killed, 10%, litter 15%, walking wounded 75%.

Persistent Gas

Unprotected or gas masks only.	Litter 75%, walking wounded 25%.
Gas masks and protective clothing.	Litter 10%, walking wounded 90%.

(b) The following figures may be used as a guide for the area covered by aircraft using chemical munitions:

<i>Munition</i>	<i>Type agent</i>	<i>Area covered</i>
Spray Tank M-10...	Nonpersistent, persistent, or smoke.	
1 aircraft w/2 tanks altitude 100 ft.	-----	75 yds. in width and 500-600 yds. in length.
3 aircraft w/2 tanks each, altitude 100 ft, 75 ft between wing tips.	-----	170 yds. in width and 500-600 yds. in length.

(c) Losses resulting from flame thrower action may be based upon the following:

1. Impact areas.

Portable flame

thrower ----- 10 x 40 yards

Mechanized flame

thrower ----- 15 x 175 yards

2. Casualties assessed.

25% of personnel in the open.

50% of personnel in bunkers or fortifications with open embrasures and doorways.

(d) In order for a unit to receive a rating of good gas discipline, the following minimum standards must be achieved in the time and order specified:

1. Take cover.
2. Don and properly adjust the protective mask within 15 seconds.
3. Sound the alarm and communicate it to all unit personnel and adjacent units.
4. Perform self or first aid when exposed to a chemical agent.
5. All personnel possess full authorization of protective equipment.
6. Continue its mission during a gas attack with minimum loss in operating efficiency.

(2) *Biological warfare losses.* Losses resulting from biological agents may be assessed according to table XII. Due to the incubation period required, the losses caused by biological agents may not appear until several days have elapsed. Umpires should be furnished, in addition to the incubation period required, data as to persistency of the agent used based on method of dissemination, weather, and terrain.

Table XII. Biological Warfare—Percentage of Casualties Assessed After Three-Day Incubation

Munition	Agent	Simulants used	Area covered	Casualties
M-10 Spray Tanks—2 tanks per aircraft.	Anti-personnel, casualty producing.	Yellow dye solution of <i>Bacillus Globigii</i> (BG).	300 yards in width 600-700 yds in length.	10-20% personnel exposed.
Aerosol Generator (2 liter capacity).	Anti-personnel, casualty producing.	<i>Bacillus Globigii</i> (BG) fluorescent particles (FP).	100 yds in width 3,500 yds in length.	10-20% personnel exposed.
Aerosol Bomb (12 oz size).	<i>Bacillus Globigii</i> (BG).	100 yds in width 300 yds length.	10-20% personnel exposed.
Special Disseminators (Vials, capsules).	Anti-personnel, casualty producing.	Oil of cloves or more other harmless simulant.	Tracer amounts poured in water to import a slight flavor.	34-45% personnel consuming.

f. Atomic Bursts.

- (1) Casualties from an atomic burst will be dictated by the effects overlays.
- (2) Units should be assessed casualties if they enter or remain in a contaminated area.
- (3) Radiological defense personnel assigned to combat elements can obtain the amount of simulated contamination in any area by questioning the unit umpire.
- (4) The amount of contamination in the area is shown on the "effects overlay" (app. VII).

71. Artillery Unit Casualty Assessment

While war experience indicates that casualties suffered by artillery units are comparatively small and

not sufficient to materially interrupt firing, the loss data for infantry should be used when appropriate to the action considered. When a battery in position is attacked the decision as to capture or destruction is based upon surprise achieved by the attackers and on the relative fire power, including the artillery pieces, that were brought to bear on the attacking troops.

72. Reconnaissance Unit Casualty Assessment

Personnel losses of reconnaissance units fighting dismounted are assessed on the same basis as infantry losses. Vehicle losses of reconnaissance units are assessed as indicated in paragraphs 61, 74, and 75.

73. Casualties From Air Action

a. Upon confirmation of an air attack the umpire marks the target with appropriate colored smoke (par. 34) and assess casualties in accordance with table XIII.

b. The table is based on one flight of 4 aircraft. The area of coverage, damage, and casualty assessments indicated are adjusted to the number of attacking aircraft. It must be realized that the location of attack as reported by the pilot from his map will differ slightly from the actual strike. The fact that the pilot attempts to select the most remunerative target for his attack is considered in assessing casualties. This does not mean that umpires should select key personnel, weapons or units, as the target unless warranted. Casualties and damages assessed may be reduced as much as 50 percent if the unit has taken adequate cover; conversely, if adequate

Table XIII. Ground Casualties Inflicted by Flight of 4 Aircraft

(When troops are reported as the target)

Armament or aircraft	Target	Area*	Personnel casualties within area
Napalm w or w/o Strafing.	Troops....	50 yds by 100 yds.	10% casualties. Fire Power 100% neutralized for duration of the attack plus 2 minutes.
HE Bombs w or w/o Strafing.	Troops....	50 yds by 100 yds.	5% casualties. Fire Power 100% neutralized for duration of the attack plus 2 minutes.
Strafing only.....	Troops....	50 yds by 100 yds.	2% casualties. Fire Power 100% neutralized (except AA) for duration of attack.

Atomic bursts—See "effects overlay" (app. VII).

* The long axis of the area parallel to the direction of flight is the basis for measure.

cover is not taken casualties may be increased 50 percent. Dispersion is not considered since assessments are based on the area of coverage. If vehicles are designated as the target, the percentage figures in the table applies to troops within a 10 yard radius of the vehicles considered damaged (par. 75).

74. Material Damage Assessment

a. Umpires assess vehicles and other materiel damaged or destroyed on the basis of a reasonable loss expectancy in a similar combat engagement. The umpire informs the occupants and operators of the severity of the damage by completing a damage card (par. 76).

b. Damages to ambulances, kitchen trucks, ration trucks, or mail trucks are not assessed.

c. Cargoes of vehicles ruled out of action may be transferred to other vehicles by the using unit.

d. Vehicles passing through or remaining within an artillery or mortar concentration of battalion size or larger are assessed losses as follows:

(1) Armored Vehicles----- $\frac{1}{3}\%$ per battery volley.

(2) Unarmored Vehicles---- 1% per battery volley.

e. Materiel (except class I supplies) contaminated by persistent chemical agents is assessed as slightly damaged; class I supplies are assessed damage according to the degree of contamination. Personnel handling contaminated materiel are required to wear protective masks until simulated decontamination is accomplished. Vehicles contaminated with persistent chemical agents must be decontaminated or operating personnel must continue to wear the protective mask for a minimum of six hours. Usual time for decontamination of a vehicle is 30 minutes. Material which has been contaminated to a military significant degree as a result of an atomic burst is ruled out of action until properly decontaminated.

f. Destroyed artillery pieces may be allowed to remain in place, out of action, for a period of from 4 to 24 hours, as directed by the chief umpire, or the crews may be required to close out the positions and take the destroyed pieces to their own prisoner-of-war inclosure and remain there until released by the umpire at the inclosure. This provides for realistic efforts to obtain replacement weapons. Crews of Aggressor artillery pieces ruled destroyed in controlled exercises report to the next higher Aggressor

Commander instead of to the prisoner-of-war inclosure if directed to close out their positions.

g. Antitank guns ruled destroyed or captured are taken by the crews to their own prisoner-of-war inclosure and remain there until returned to their units by an umpire. Crews of Aggressor antitank guns ruled destroyed in controlled exercises close out their positions and report to the next higher Aggressor Commander for instructions.

h. Materiel damaged by an atomic burst will be assessed a percentage damage as indicated on the "effects overlay" and ruled out of action in accordance with *a* through *g* above, or as directed by the chief umpire.

75. Damage From Air Action

a. The following chart is applicable to assessment of damages resulting from air action:

Vehicles Destroyed by Flight of Four Aircraft

Armament	Target	Area	Vehicles destroyed (percentage)
Napalm	Armored vehicles	50 yds by 50 yds	10
	Unarmored vehicles	50 yds by 50 yds	10
Rockets	Armored vehicles	50 yds by 50 yds	5
	Unarmored vehicles	50 yds by 50 yds	5
Strafing	Armored vehicles	50 yds by 50 yds	0
	Unarmored vehicles	50 yds by 50 yds	10

Atomic Bursts—See "effects overlay."

*Armored vehicles with exposed crews or those completely immobilized during the attack.

b. If the vehicles subjected to air attack are mixed armored and unarmored the ratio of each type in the group is used in the damage assessment. The table also may be used as a guide in assessing damage to artillery pieces, trailers, and other material subjected to air attack.

76. Damage Tags

a. Slightly Damaged. A green tag bearing the words "Slightly Damaged" (fig. 4).

- (1) The umpire assessing the damage fills out the front of the tag giving time, date, and place the vehicular equipment was damaged. The unit and the bumper number (or other equivalent number) are entered in the spaces provided. The nature of the damage is briefly described. The driver or NCO in charge of the vehicle or equipment signs on the back of the perforated stub. The umpire signs the tag and the stub. The stub is retained by the umpire and the tag is tied to the equipment or vehicle. All stubs are forwarded to Umpire Headquarters along with other reports. An orange flag is displayed on the vehicle or equipment.
- (2) The driver or NCO in charge must determine a course of action to be taken to repair the vehicle or equipment. The individual completing the repairs fills out the back of the tag. An officer or NCO in charge of the repairing unit, or the driver in case of first echelon repairs, signs the tag. The tag and the orange flag are removed from the vehicle or equipment and turned over to the

(GREEN)

SLIGHTLY DAMAGED		SLIGHTLY DAMAGED	
REMAIN IN PLACE FOR THE PERIOD OF TIME NEEDED TO REPAIR EQUIPMENT. DISPLAY ORANGE FLAG.		DATE _____	TIME _____
		LOCATION _____	LOCATION _____
		UNIT _____	UNIT _____
		BUMPER NO _____	BUMPER NO _____
		DAMAGE _____	DAMAGE _____
		UMPIRE _____	UMPIRE _____
CUMPIRE			
<input type="radio"/>			

FRONT OF TAG

DATE AND TIME REPAIRED _____		DRIVER OR NCO IN CHARGE SIGNATURE _____	
NATURE OF REPAIRS _____			
REPAIRED BY DRIVER _____			
BY 2ND ECHELON _____			
CUMPIRE			
<input type="radio"/>			

BACK OF TAG

Figure 4. Slightly damage tag.

umpire of the unit making the repairs. The umpires send all tags with their reports to Umpire Headquarters where a check is made to make certain that all vehicles and equipment which have been tagged as slightly damaged have been properly repaired (sim-

ulated) and that proper logistical factors have been taken into account.

b. *Severely Damaged.* A red card bearing the words "Severely Damaged" (fig. 5).

- (1) The umpire's procedure in filling out this tag is the same as in paragraph a(1) above.
- (2) The driver or NCO in charge of the equipment or vehicle must contact his unit com-

(RED)	SEVERELY DAMAGED	
REMAIN IN PLACE UNTIL EVACUATED BY MAIN- TENANCE EQUIPMENT. YOU MAY SEND FOR HELP. TIME DISPLAY ORANGE FLAG UNTIL EVACUATION IS COMPLETED. DATE ____ TIME ____		DATE ____ TIME ____ LOCATION ____ UNIT ____ BUMPER NO ____
NATURE OF DAMAGE ____ TYPE ____		DAMAGE ____ BUMPER ____
UMPIRE		UMPIRE ____
FRONT OF TAG		
DATE AND TIME EVACUATED ____ NATURE OF REPAIRS ____ REPAIRED BY 3RD ECHELON ____ 4TH ECHELON ____ 5TH ECHELON ____		DRIVER OR NCO IN CHARGE SIGNATURE ____
PLACE REPAIRED EQUIPMENT REPLACED ____ WHERE WAS REPLACEMENT ISSUED ____ DATE AND TIME OF REPLACEMENT ____ SIGNATURE OF OFFICER OR NCO IN CHARGE OF REPAIRING UNIT ____		BACK OF TAG

Figure 5. Severely damage tag.

mander to have the equipment or vehicle evacuated for repairs. The unit making the repairs fills out that portion on the back of the tag pertaining to repairs. An officer or NCO of the unit making the repairs signs the tag. If it is decided to replace the item, then that portion of the tag pertaining to replacement is completed. An officer or NCO of the issuing unit signs the tag. In either case, the completed tag is turned over to the unit umpire who forwards it to Umpire Headquarters. A check is made to see that all vehicles or equipment which have been tagged as "Severely Damaged" have been properly evacuated and repaired (simulated) or replaced and that proper logistical factors have been taken into account.

c. Destroyed. A white tag bearing the word "Destroyed" (fig. 6).

- (1) The umpire fills out the tag as in paragraph *a(1)* above.
- (2) The driver or NCO in charge of the vehicle or equipment remains in place for one hour and then reports to his unit that the vehicle or equipment is destroyed. The unit reports, through channels, the combat loss. When the replacement item is available at Regimental Supply (or equivalent office), the unit is notified to come and pick up the replacement. The vehicle or equipment is then taken to the point of delivery where the tag is removed and the equipment is placed

(WHITE)

DESTROYED	
DATE _____ TIME _____ LOCATION _____ UNIT _____ BUMPER NO _____ UMPIRE _____	
(1) REMAIN IN PLACE FOR ONE HOUR IN CASE OF VEHICLE. (2) PROCEED TO YOUR UNIT. (3) REMAIN THERE UNTIL YOUR RSO NOTIFIES UNIT THAT HE HAS REPLACEMENT (4) REPORT TO RSO TO PICK UP REPLACEMENT. TYPE _____ UNIT _____ BUMPER NO _____	
<input type="radio"/>	

FRONT OF TAG

DATE AND TIME EVACUATED _____ EQUIPMENT REPLACED AT _____	
<input type="radio"/>	
DATE AND TIME OF REPLACEMENT _____ SIGNATURE OF OFFICER OR NCO IN CHARGE OF ISSUING UNIT _____	

BACK OF TAG

Figure 6. Destroyed tag.

in service. An officer or NCO of the issuing office fills out the back of the tag, signs it, and turns it over to the unit umpire. The tag is forwarded to Umpire Headquarters where a check is made to see that all destroyed vehicles or equipment have been properly replaced.

d. To facilitate matching up tags and stubs at Umpire Headquarters, they should be numbered serially prior to issue.

77. Aircraft Destroyed by Ground Fire

a. Antiaircraft umpires assess damages to attacking aircraft resulting from ground fire and report the assessment to umpire operations. Adequate air-ground communications should be available so that the antiaircraft battalion umpire can report losses to the air umpire with the flight. When determining the losses to be assessed against aircraft resulting from ground fire, consideration must be given to the type weapons which engage the target. For example, when the target is out of range of automatic weapons but within range of 90-mm guns, only the 90-mm guns will be considered to be engaging the target.

b. Losses to flights engaged by both guns and automatic weapons are the sum of the losses incurred from each type of fire. Aircraft losses may be assessed in accordance with the following formula:

- (1) For planes, other than jet, within 15,000 feet altitude and within 7,000 yards horizontal range: (number of guns) x (number of planes) x .02=LOSS.
- (2) For jet aircraft divide the resulting loss by 5.

Section IV. OBSTACLES AND DELAYS

78. Obstacles

a. The primary purpose of an obstacle is to delay opposing forces. Obstacles affect friendly as well

as enemy troops. Umpires enforce appropriate delays in all cases.

b. Obstacles may be simulated but are actually constructed if permissible on the terrain being used. If the obstacle is to be simulated, materials and personnel for construction must actually be on hand and checked by the umpire. The obstacle is not marked until the time estimated to be required for construction has passed.

c. The unit that executes a simulated obstacle furnishes a guard who is given umpire authority and identification so that he can enforce compliance by all troops. Guards remain on duty at obstacles until relieved by the umpire or until the end of the exercise. Parent units supply the obstacle guard with emergency type rations. After the opposing force has reduced an obstacle, the unit umpire relieves the guard who is then returned administratively to his unit.

d. When a simulated obstacle has been completed, the unit umpire furnishes the guard one copy of completed "Certificate of Obstacle" (fig. 7). If an umpire is not present a unit officer may sign the certificate but must advise the unit umpire of his action. The umpire should check the form as soon as practicable; however, the statement on the form is valid with the signature of a unit officer. The unit executing a simulated obstacle also places a black flag at each end of the obstacle.

e. Obstacles that result from air action or chemical attack are marked by the ground umpire who assessed the damage. He completes the certificate,

CERTIFICATE OF OBSTACLE

(to be executed by unit officer when umpire is not present)

1. TYPE AND NATURE OF OBSTACLE (Ex: bridge demolition, bridge damaged by bombs, road crater)
2. METHOD USED (Brief description of work done, Ex: Destroyed abutments by tamped charges, etc.)
3. PERSONNEL USED (Ex: 1 squad, 2 hours) 4. EQUIPMENT USED:
(Ex: 1 earth auger, 1 hour; 1 squad demolition set)
5. MATERIAL OR EXPLOSIVE USED (Ex: for abutments, 6 charges 200 pounds each; steel, 10 charges 15 pounds each)
6. STARTED (Date and Hour)
COMPLETED (Date and Hour) or DATE AND HOUR BOMBED
7. CONSENT:

UMPIRE CERTIFICATE

1. I HAVE INSPECTED THE OBSTACLE DESCRIBED ABOVE AND FIND THAT IT (WILL) (WILL NOT) CREATE AN EFFECTIVE MILITARY OBSTACLE.
2. A CAREFUL ESTIMATE HAS BEEN MADE. THE FOLLOWING WILL BE REQUIRED TO RESTORE TRAFFIC AT THIS POINT.
 - a. ENGINEER PERSONNEL AND TIME REQUIRED: (Give two alternatives) For example, one platoon 6 hours or one company $3\frac{1}{2}$ hours. Last alternative based on maximum number of men who can be effectively employed on job. Time is taken from time of arrival of men and material on the site.
 - b. MATERIALS: (As judged necessary by engineer umpires of unit reducing obstacle.)
 - c. EQUIPMENT: (Reduce time given in "a" above by 1/3 for suitable labor-saving equipment, suitability determined by engineer umpire of unit reducing obstacle.)
3. DATE AND HOUR EXECUTED: (If no umpire is present at the time of execution, this may be completed by the senior officer of the executing party and be official. An umpire will verify any such work executed by his unit as soon as practicable.)

UNIT OFFICER	UMPIRE	
CERTIFIED		
OBSTACLE REDUCED AT	hrs	DATE
BY (UNIT)	(SIGNATURE OF UMPIRE)	(RANK)

Figure 7. Certificate of obstacle.

INSTRUCTIONS-OBSTACLE GUARDS

AUTHORITY: Same as umpire.

NUMBER: Unit executing simulated obstacles post two guards at each obstacle.

EQUIPMENT: Umpire helmet liner and white arm loops. Flashlight, watch, paper and pencil. Food and water for remainder of exercise. Personal equipment. This certificate.

ACTIONS: A red flag is placed at each end of a simulated obstacle by the unit executing the obstacle. Umpires post obstacles resulting from air actions.

ACTIONS: Report personnel who fail to observe obstacle by name, vehicle number, or unit to any umpire or to your commanding officer when you are relieved. When opposing troops have cleared an obstacle, have umpire sign this paper and relieve you. Then report to nearest troops for processing as a prisoner and return to your unit.

INSTRUCTIONS-UMPIRES

ACTIONS: Require operations to be actual whenever possible. Fill in data on reverse side and give to guard at obstacle. Check that material to execute or reduce simulated obstacles is at site when operations are carried out. Visit all detachments sent on obstacle work to complete the certificate.

SPECIAL NOTES

Troops may go around an obstacle provided the movement is actual. The umpire with a delayed unit must not modify the provisions of the certificate of obstacle under any circumstances.

When a defended obstacle is attacked by the opposing side, the result of the attack is decided as in any similar action. The clearing of an obstacle by the attacker can commence only after successful completion of the attack is ruled by the umpire.

Figure 7.—Continued.

places the flags, and details a guard from the nearest unit.

f. Troops may go around an obstacle provided the movement is actual. The umpire with a delayed unit must not modify the provisions of the certificate of obstacle under any circumstances.

g. When a defended obstacle is attacked by the opposing side, the result of the attack is decided as in any similar action. The clearing of an obstacle by the attacker can commence only after successful completion of the attack is ruled by the umpire. Action to reduce the obstacle is effective only after completion of the troop action.

h. Contaminated areas must be avoided by combat elements when appropriate authority so directs. Units failing to avoid such areas will be assessed appropriate casualties.

79. Delays

a. Air attacks against bridges and the delays resulting from the damage inflicted influence the progress of a tactical exercise. Prior notice of air attacks on bridges should be furnished umpire operations by air umpires in order that an umpire may be designated to be at the bridge site at the time of the attack. When the bridge is defended by an antiaircraft unit, the antiaircraft unit umpire may be designated to act as the umpire at the bridge site. The number and weight of bombs are given the umpire at the bridge site through umpire channels as soon as received from the air umpire.

(1) After receipt of this information the umpire at the bridge site will determine the number of hits on the target in accordance with the following percentages:

(a) Dive or glide bombing by Fighter-Bomber aircraft—15 percent of bombs dropped by any single flight.

- (b) Light or medium bombers in level flight, bombing by visual methods—5 percent.
- (c) Light or medium bombers in level flight, bombing by ground controlled radar—10 percent.
- (d) Heavy bombers in level flight, bombing by visual methods—3 percent.
- (e) Heavy bombers bombing by ground controlled radar—5 percent.

(2) Having determined the number of hits the umpire will use the following as a guide in assessing delays and damages to bridges:

- (a) Steel truss and concrete bridges of substantial construction.

Bomb weight	Delay (after arrival of men and material)	Necessary for repair
100 lb.....	None.....	None.
300 to 600 lb.....	2 hrs.....	1 Plat Engineer, 3 trailer loads timber or equivalent.
1,000 to 2,000 lb.	4 hrs.....	1 Plat Engineer, 6 trailer loads timber or equivalent.

- (b) Wooden highway and railroad bridges. 100 pound bomb or heavier has same conditions as shown in (a) above for 300 to 600 pound bombs.
- (c) Pontoon bridge. 100 pound bomb or heavier will require a one hour delay after material for one-third or 4 spans of the bridge is at the site.

(d) Conditions in (a), (b), and (c) above are for one hit; for more than one hit, men, material, and delay will be increased accordingly.

b. Marching columns or convoys attacked by air will be assessed casualties and damages as prescribed in the tables in paragraphs 73 and 75. Marching columns or convoys attacked by armor or artillery and fail to deploy or take cover logically are assessed casualties and damages accordingly.

c. Marching columns or convoys attacked by air, armor, or artillery and prevented from reacting logically, by administrative restrictions, are assessed delays equivalent to the time required to disperse and assemble. Under these conditions no casualties or damages will be assessed.

d. Personnel working on bridges, roads, or other projects who are subjected to massed mortar or artillery fire or an air attack are required to cease work for the duration of the concentration or attack. Work may continue if the area is subjected to interdiction fire only but no work can be carried on in an area subject to direct small arms fire.

e. Information on delays caused by atomic bursts will be furnished by the umpire in accordance with the "effects overlay" (app. VII).

f. Areas contaminated with a persistent chemical agent will cause delays unless commanders accept casualties (as determined in par. 70e) consistent with the degree of protection and the time exposed within the area. If the commander will not accept the casualties assessed from paragraph 70e and does

not move around the contaminated area, delays are assessed as follows:

- (1) If contaminated area is not bypassed, delay is equal to time required to move the distance involved as specified in FM 101-10.
- (2) If contaminated area is crossed on decontaminated routes, delay is equal to time required to properly decontaminate the routes.

CHAPTER 5

COMMUNICATIONS AND TRANSPORTATION

80. General

Communications for the ground umpire group normally consists of radio, wire, and messenger. Wire and messenger should be used for routine messages to reduce the volume of radio traffic. Radio communication is mandatory for umpire liaison teams, fire marker teams, and unit umpires at battalion level and below. An extension wire net, with readily accessible leads to all key localities in the exercise area is essential to insure adequate communications between umpire headquarters and unit umpires.

81. Free and Controlled Exercises

In free exercises identical communication nets are provided for umpires with both sides. Only the fire marker net and the umpire liaison net are required for umpires with the Aggressor Force in controlled exercises when unit umpires are not assigned.

82. Umpire Communication Center

In a large scale exercise, in order to facilitate the review and analysis of umpire reports by the operations section of Headquarters Umpire Group (par. 12h), it will be necessary to establish an effective

Umpire Communications Center. The communications center must have sufficient stations to provide one radio receiver for each three battalions reporting to the operations section. Adequate telephone facilities must also be provided. Teletype circuits must be provided between relay stations, umpire operations section and Exercise Director War Room.

83. Radio Nets

Umpire radio nets are organized generally in the same manner as, and parallel to, normal troop radio nets (figs. 8-14). Radios of the types indicated are suggested for the following unit umpires:

84. Umpire Liaison Teams

Umpire Liaison Teams, using the Exercise SOI, may operate in any net of the unit to which temporarily assigned. When not performing umpire functions, these teams will stand by the Chief Umpire net unless otherwise instructed by the Chief Umpire.

COMPANY UMPIRE NET

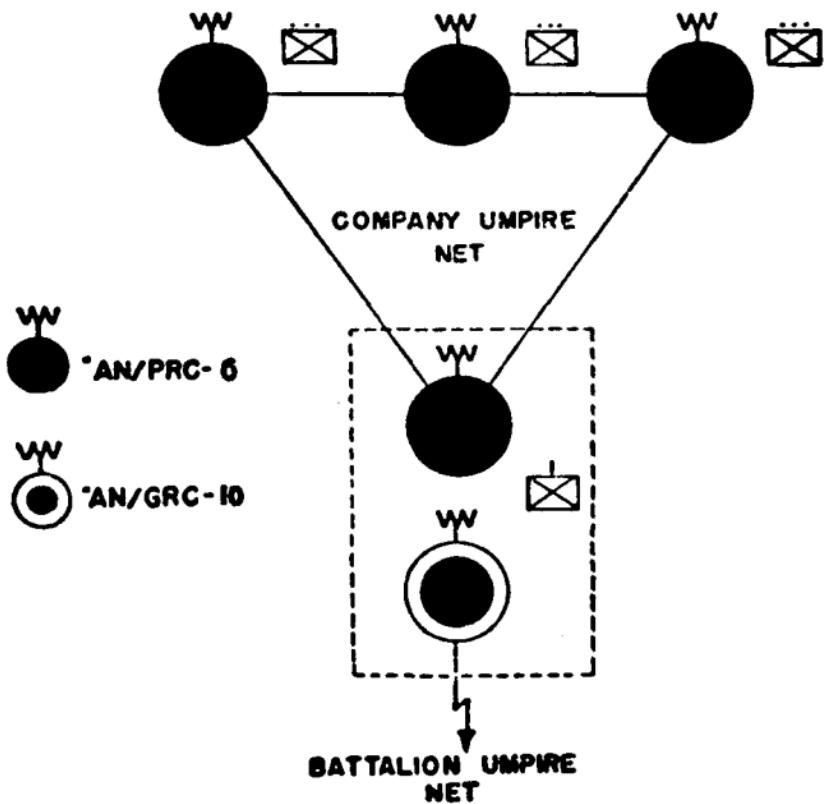


Figure 8. Company umpire net.

85. Fire Marking

Fire marker teams maintain radio contact with the fire marker control team (pars. 44 and 45). Only under exceptional circumstances will existing artillery lines of communication be used for communication between the control team and the fire direction centers.

BATTALION UMPIRE NET

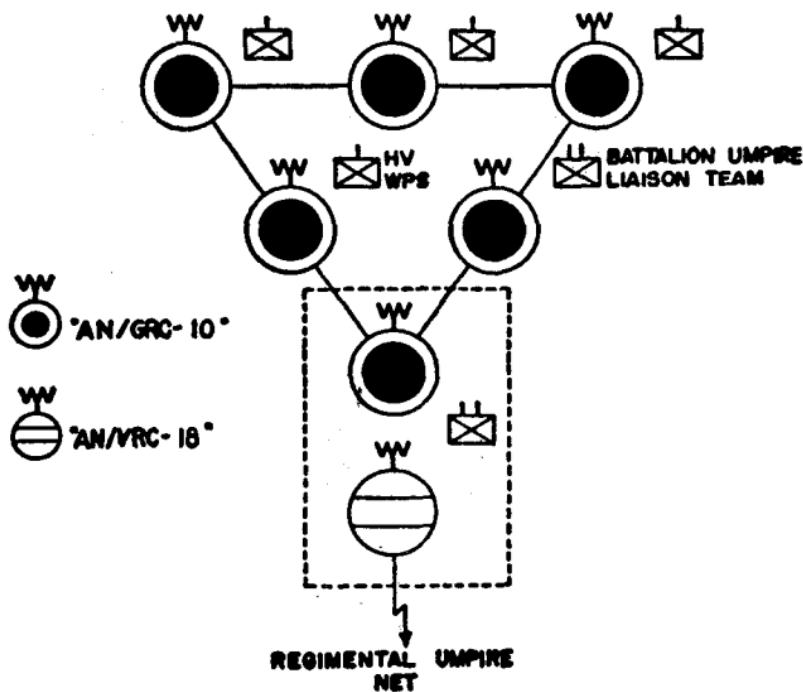


Figure 9. Battalion umpire net.

86. Umpire Relay Center

When distance or mechanical difficulties preclude battalion umpires or liaison teams from communicating directly with the Communications Center at Umpire Headquarters, relay stations will be suitably located throughout the exercise area to retransmit messages to the umpire operations room. Radio communications will be augmented by telephone and teletype circuits between the relay stations and Umpire Communications Center in sufficient number to handle expected *peak* traffic loads. Operating

REGIMENTAL UMPIRE NET

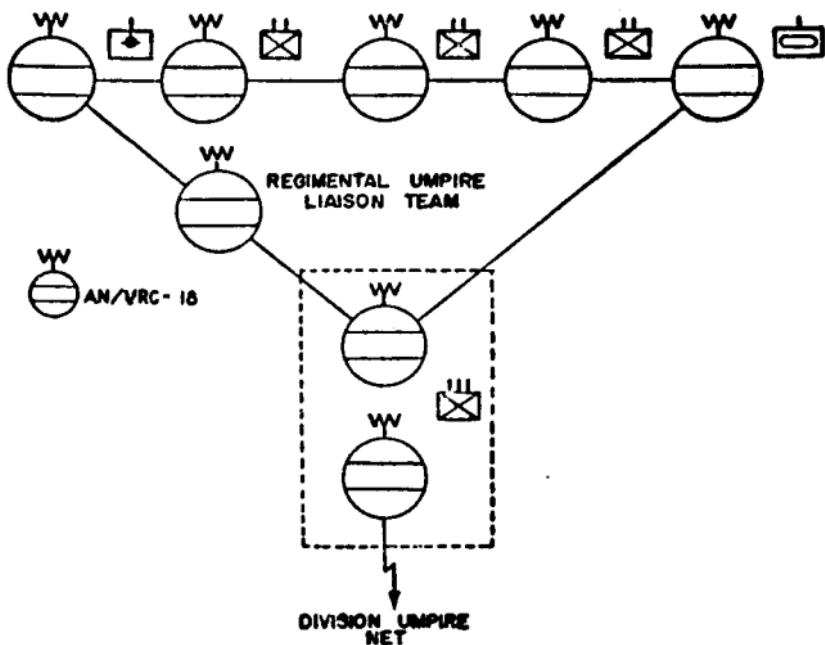


Figure 10. Regimental umpire net.

personnel of relay stations may be augmented by umpire operations personnel to screen or consolidate messages and to maintain a limited operations map for the Chief Umpire and Exercise Director.

87. Radio Procedure

Standard voice radio procedure is used. Due to the large number of sets on some channels, extreme caution must be exercised by umpires to insure that only necessary messages are transmitted by radio. Clear text is used. Officer umpires may be expected to operate their own radio sets. A simplified prearranged code system should be utilized to negate the effects of monitoring umpire traffic.

88. Wire

a. Umpire wire nets should be established along the planned axes of communication of the tactical units to be umpired.

b. Umpire liaison teams and unit umpires down to battalion level should be equipped with portable tele-

DIVISION UMPIRE NET

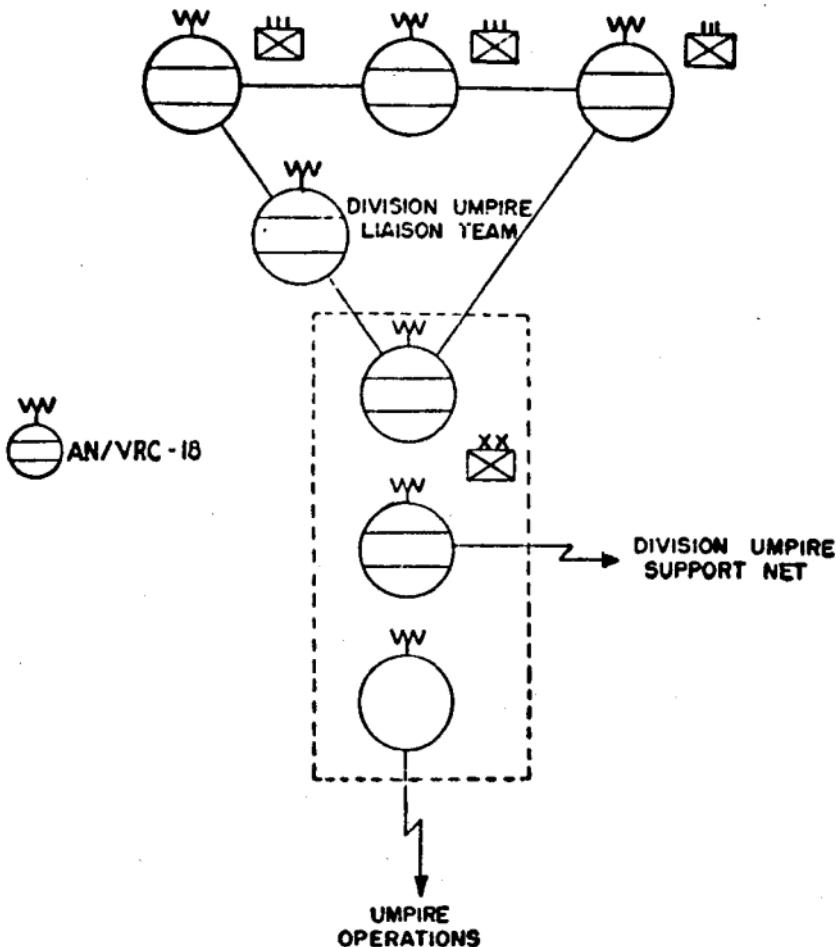


Figure 11. Division umpire net.

UMPIRE RADIO NETS - DIVISION

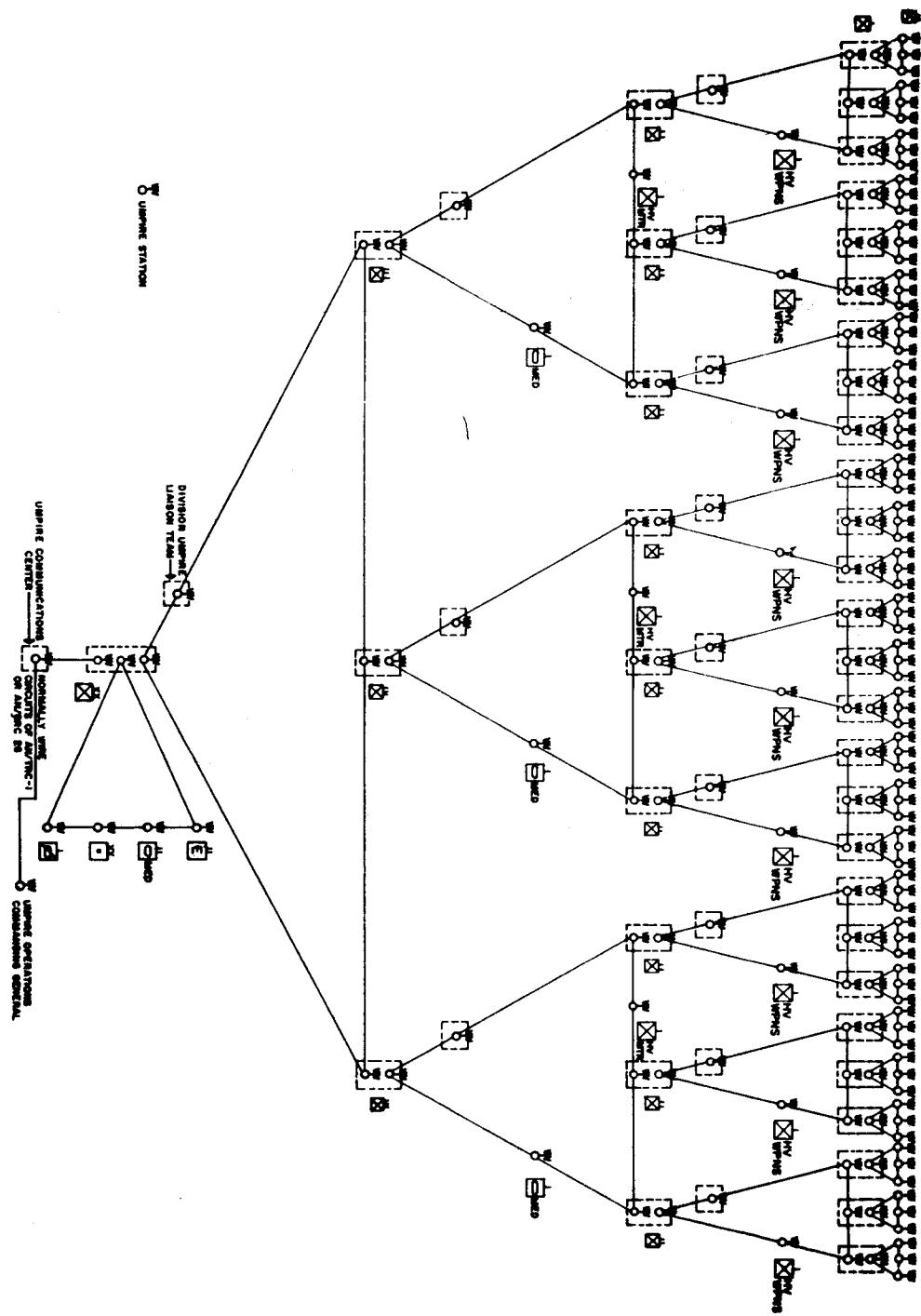


Figure 14. Umpire radio nets—division.

355734 O—55 (Face p. 109)

DIVISION UMPIRE SUPPORT NET

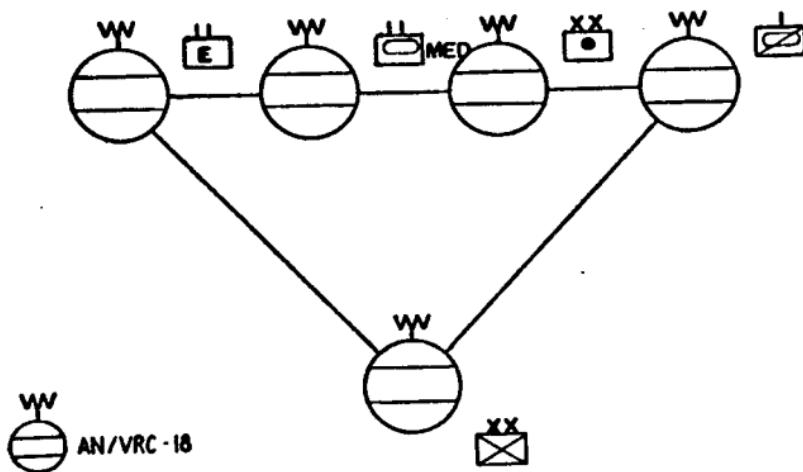


Figure 12. Division umpire support net.

FIRE MARKER NET

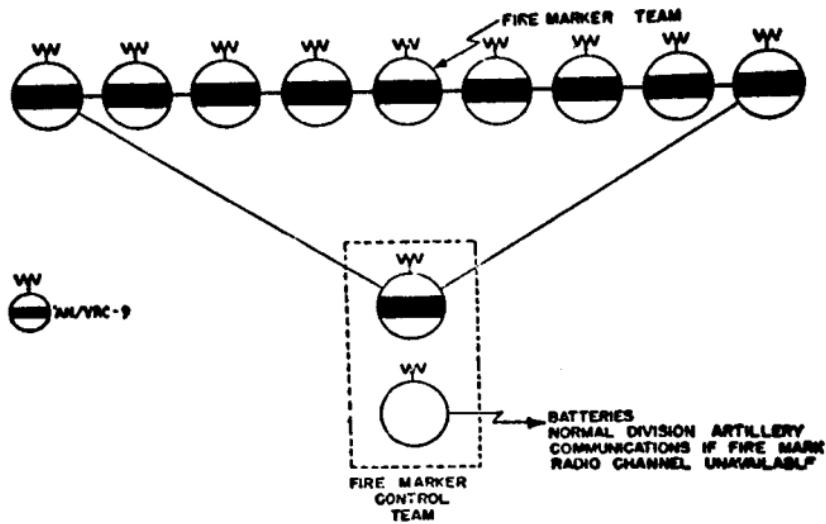


Figure 13. Fire marker net.

phones and a line route map showing the umpire wire system and the location of all terminals. Company umpires may be provided portable telephones if available, and the extent of the wire system warrants. Umpire wire and cable should be identified by a tag bearing the legend "Umpire Wire Net." In addition, supporting poles may be marked with a 6 inch white band. Regimental and higher unit umpires should be furnished a telephone and maintain a man on duty at the phone 24 hours a day.

c. As a guide in planning an umpire wire net, one terminal per square mile of the active exercise area of operations will insure that a unit umpire is always within one-half mile of a terminal to which he can tie in his portable field phone.

89. Transportation

(see par. 9c, app. II)

a. Vehicles are assigned to umpires who are equipped with nonportable type radio sets and to others as required. This includes liaison teams, fire marker teams, and unit umpires down to battalion or company level depending upon the type of units being umpired and the area to be covered.

b. Transportation for umpires not assigned vehicles is provided by units to which umpires are assigned.

c. Vehicles must be provided for special activities, including prisoner of war exchange and shifting small unit umpires.

d. Spare vehicles equipped with suitable radios must be available for replacement and emergency purposes.

e. Army aircraft, equipped with appropriate radio communications, are provided for umpire use whenever necessary in order to provide umpires with the same speed and mobility as the forces being observed.

APPENDIX I

REFERENCES

AR 380-5----- Safeguarding Defense Information.

PAM 310—Series---- List of Military Publications.

SR 320-5-1----- Dictionary of United States Army Terms.

SR 320-50-1----- Authorized Abbreviations.

AR 611-201----- Manual of Enlisted Military Occupational Specialties.

FM 3-5----- Tactics and Technique of CBR Warfare.

FM 21-5----- Military Training.

FM 21-8----- Military Training Aids.

FM 21-30----- Military Symbols.

FM 21-40----- Defense Against CBR Attack.

FM 21-41----- Soldier's Manual for Defense Against CBR Attack.

FM 30-5----- Combat Intelligence.

FM 30-15----- Examination of Personnel and Documents.

FM 30-101----- The Maneuver Enemy.

FM 30-102----- Handbook on Aggressor Military Forces.

FM 30-103----- Aggressor Order of Battle.
FM 30-104----- Aggressor Representation.
FM 100-5----- Field Service Regulations
Operations.
FM 100-31----- Tactical Use of Atomic
Weapons.
FM 101-5----- Staff Officers' Field Manual,
Staff Organization and
Procedure.
FM 101-10----- Staff Officers' Field Manual,
Organization, Technical,
and Logistical Data.
TF 30-1543----- The Aggressor Force (Run-
ning Time: 26 min).
TM 3-216----- Military Biology and Bio-
logical Warfare Agents.
TM 9-1981----- Military Pyrotechnics.
TM 28-200----- Capabilities of Atomic
Weapons.
PAM 39-1----- Tactical Use of Atomic
Weapons, Unclassified
Military Effects.

APPENDIX II

UMPIRE PLANNING GUIDE

1. Purpose and Application

To outline some of the major considerations involved in planning the umpire organization for a large field exercise or maneuver involving several divisions, or a point exercise involving elements of two or more of the Armed Forces of the United States. With necessary modifications, the considerations set forth herein are applicable to planning the umpire organization for any exercise.

2. Planning

Planning for the umpire organization should be initiated concurrently with that for the exercise itself. It is based upon the general concept as contained in the exercise directive and upon such additional instructions and directives as may be issued by the commander responsible for the preparation and conduct of the exercise. The formation of an umpire planning group early in the planning phase, to include the chief umpire and key personnel, and a minimum of two special weapons employment officers, will facilitate the establishment of definite policies and formulation of plans for the organization of the umpire group. In a joint exercise, representatives from the participating Armed Forces should be included in this planning group.

3. Umpire Organization

a. General. The umpire organization is discussed in chapter 2. It provides for a headquarters containing a conventional general staff organization and such supporting troops as may be required. The strength, organization, and specific duties to be assigned to each staff section will vary with the concept, size and objectives of the exercise.

b. Location and Layout of the Umpire Headquarters. These requirements will vary with each exercise and are frequently dependent upon the facilities available. The location and facilities selected should be accessible to the headquarters of the Exercise Director and provide—

- (1) Adequate space for the Umpire Headquarters and its activities, to include appropriate grouping of related activities.
- (2) Facilities for an operations room with sufficient space for necessary operating personnel, operation of a war map, charts, air operations board, air strike board, weather information, and operational and command conferences.
- (3) A Communication Center equipped to receive, transmit, and process messages and reports.
- (4) Facilities for quartering and messing of personnel; storage and maintenance of equipment, supplies, and vehicles; parking of vehicles; and a landing field for helicopters.¹

¹ A service club type building has proven satisfactory for the operational headquarters of an umpire group.

c. Organization and Function of the Umpire Staff.

The principles outlined in FM 101-5 are generally applicable to the umpire staff. Certain specific functions of umpire staff sections particularly applicable in planning umpire organization are set forth as a guide in paragraphs 4 through 10 of this appendix.

4. Personnel and Administration

a. The chief of this section is responsible for planning, coordination, and supervision of the following:

- (1) The establishment of umpire personnel policies.
- (2) The formulation of an Umpire Table of Distribution based on the umpire requirements for the exercise.
- (3) The requisitioning of personnel based on the approved Table of Distribution.
- (4) The recommendations for and the assignment of personnel to positions established by the Table of Distribution.
- (5) The reception, processing, and deprocessing of personnel.
- (6) Establish a plan for the preparation and accomplishment of officers' efficiency reports.
- (7) The procurement, utilization, and administration of civilian personnel when authorized.
- (8) The procurement and assignment of quarters; the establishment of messes; the internal organization and arrangement of the headquarters; and allocation of shelter and other facilities to umpire headquarters troops.

(9) Provides (in coordination with the Finance Officer) necessary assistance in the preparation of—

- (a) Travel vouchers.
- (b) Per diem vouchers.
- (c) Allotments, including letters of transmittal.
- (d) Military pay orders for changes to be entered on pay records.

b. Processing of umpire personnel may be facilitated through early preparation and approval of detailed plans. These plans should provide the following:

- (1) That assignment orders—
 - (a) Are provided in sufficient copies, normally 10, with one copy furnished to umpire headquarters prior to the individual's reporting date.
 - (b) Show adjusted date of rank for civilian component officers.
 - (c) Include degree of clearance for access to classified material.
- (2) That other necessary records are forwarded with or prior to the arrival of the individual.
- (3) That each officer prepare necessary forms, including pay and mileage vouchers, under the supervision of umpire headquarters personnel.²

² The preparation of the necessary forms may be expedited by providing clerk typists to obtain essential information from the individual and prepare forms for signature.

5. The Adjutant General

- a.* Reference figure 1.
- b.* The Adjutant General's Section—
 - (1) Maintain files and publications for the Umpire Headquarters to include—
 - (a) A complete file of army regulations, special regulations, tables of organization and equipment, technical manuals and field manuals pertinent to the headquarters.
 - (b) All directives and correspondence of umpire and higher headquarters.
 - (2) Requisitions, stores, and distributes publications and Department of the Army and locally approved blank forms as required.
 - (3) Disposes of the records of umpire headquarters in accordance with instructions issued by the Exercise Director.
 - (4) Receives, accounts for, and distributes all classified material in accordance with the provisions of AR 380-5.
 - (5) Operates the message center, and postal service.
 - (6) Provides a locator system for personnel of the headquarters.
 - (7) Publishes general and special orders, daily bulletins, and other directives or publications as directed.
 - (8) Maintains Field 201 files and other records of umpire personnel.
 - (9) Prepares and submits personnel rosters, and strength returns as required.

(10) Reproduces mimeograph material for the various staff sections as required.

6. Headquarters Commandant

a. The Umpire Headquarters Commandant may operate as an assistant to the Exercise Headquarters Commandant or as the Umpire Headquarters Commandant only. In a large scale exercise the latter will facilitate the interior administration of the Umpire Headquarters.

b. The Headquarters Commandant commands all troops not assigned or attached to subordinate commands; provides internal administration for the headquarters; provides local security for the headquarters; and, under the direction of the Personnel and Administration Section prepares plans for and moves the headquarters when directed.

c. The Headquarters Commandant and his staff should arrive in the exercise area prior to the arrival of the Chief Umpire and umpire planning group. This will permit the Umpire Headquarters Commandant to—

- (1) Prepare plans for the establishment of the headquarters.
- (2) Prepare plans and facilities for the reception of incoming personnel to include preparation of locator cards (locator cards when completed must be forwarded to the Umpire Adjutant General), quartering, and messing of umpire personnel. Although messes are normally operated by the Exercise Headquarters Commandant, the

Umpire Headquarters Commandant may be required to operate an Umpire Mess.

- (3) Make early arrangements for—
 - (a) Drawing supplies direct from the issuing agencies rather than through the Exercise Headquarters Commandant.
 - (b) Setting up property books.
 - (c) Designation of a property officer for each section or other activity.
 - (d) Obtain estimates and prepare requisitions for equipment required by the various staff sections.
- d. Provide personnel for administrative duties, for care and cleaning of BOQ's, briefing rooms, headquarters building, and general fatigue.
- e. Establish a pool of motor vehicles for the Umpire Headquarters.
- f. The assignment of an appropriate TOE unit to the Umpire Group will provide the Headquarters Commandant with the operating personnel and equipment required by this section. This unit should be of battalion size for a divisional exercise and correspondingly larger when the scale of the exercise is larger.

7. Intelligence Section

a. The functions of the intelligence section fall into two categories: intelligence aspects of the exercise, and intelligence support of the umpire group.

b. With regard to the intelligence aspects, the chief of this section in coordination with the Operations and Training Section, plans and is responsible for:

- (1) The supervising of umpiring of intelligence and counter-intelligence activities.
- (2) Participation in the functioning of the operations center at umpire headquarters to include:
 - (a) Maintaining a joint current situation map in conjunction with the Operations and Training Section.
 - (b) Maintaining aerial reconnaissance information to include photo indexes and print files.
 - (c) **Briefings.**

c. With regard to the intelligence support of the umpire group, the chief of this section plans and is responsible for:

- (1) Providing the intelligence training for the umpire school.
- (2) Arranging for personnel and equipment to provide intelligence support for the umpire group.
- (3) General staff supervision of security matters pertaining to the Umpire Group.
- (4) Formulating early plans and recommendations for fulfilling the security clearance requirements of Umpire Group personnel, and supervising the execution of such plans prior to and during the exercise period.
- (5) Conducting security surveys at umpire installations to include atomic security violations.
- (6) Procurement and distribution of maps and aerial photographs to the Umpire Group. The maps and quantities listed below may

be used as a guide in estimating the map requirements for umpires and Umpire Headquarters in a large joint exercise involving an umpire group of approximately 1,000 umpires.

1/200,000 road map-----	60 sets
1/125,000 topographical map-----	100 sets
1/50,000 topographical map-----	250 sets
1/25,000 with 20' contours, topographical map and photo printed back to back-----	1,200 sets

The 1/125,000 and 1/50,000 maps are generally used by unit umpires of an Armored Division and for general planning. The 1/25,000 is the map generally used by unit umpires of an Infantry or Airborne Division.

The 1/25,000 map is also used in making atomic bursts "effects overlays" (App. VII).

- (7) Procurement and dissemination of weather forecasts.
- (8) Establishing a "TOP SECRET" control plan for use within the Headquarters.
- (9) Issue appropriate directives to establish the requirements for participating units to safeguard classified information.

8. Operations and Training Section

a. Organizational Planning. The organization of the Operations and Training Section provides—

- (1) Operations Subsection.
- (2) Schools Subsection.

- (3) Records and Reports Subsection.
- (4) Special Weapons Subsection.
- (5) Umpire Liaison Teams.

The work load of these subsections varies widely during each phase of the exercise. The Operations and Training Section is initially composed of a small nucleus of planners; Records and Reports and Special Weapons subsections are very small, but the Umpire School must be fully manned and operating, training the umpires for the exercise. The Special Weapons subsection must be augmented with additional special weapons employment staff officers in proportion to the number of atomic weapons allocated to the combat elements. As the pre-exercise training phase ends and the beginning of the tactical phase approaches, umpire school operations decrease and personnel are redistributed within the Operations and Training Section. The Operations subsection is materially expanded just prior to the tactical phase. Although operating on a 24-hour basis during the tactical phase, operations taper off sharply at the end of the exercise. Umpire Liaison Teams are required only during the tactical phase. The Reports and Records subsection does not reach its peak of operations until the tactical phase actually starts, but its operations continue at full strength until well after the exercise is over.

b. Operations Subsection. In the planning and pre-exercise training phases this subsection is relatively small, but prior to the beginning of the tactical phase it must be expanded to man the operations

room on a 24-hour basis and to establish field headquarters as required. This subsection—

- (1) Assists in the coordination of matters pertaining to umpire operations, planning, organization, and training.
- (2) Coordinates with—
 - (a) The Supply Officer on transportation and individual umpire requirements.
 - (b) The Signal Officer on communication facilities.
- (3) Prepares a project chart for staff planning purposes.
- (4) Coordinates with the Schools section, plans and implements umpire participation with troops for training of umpires, to include CPX's and field exercises for training of both umpires and operations center personnel.
- (5) Prepares and publishes an SOP, Umpire Rules, and Instructions.
- (6) Prepares and submits an Umpire Control Plan.
- (7) Manages the operations center at Umpire Headquarters to include—
 - (a) Maintaining a current situation map, planning map, and air operations board for US and Aggressor Forces.
 - (b) Briefings.
 - (c) Evaluating incoming messages, and dispatches such data as required for the Exercise Director's Operations Section.
 - (d) Maintaining the Operations Section journal.

- (8) Operates additional operation centers in the field as directed.
- (9) Keeps the Chief Umpire informed on plans, troop movements, and special events.
- (10) This subsection must be organized to provide three overlapping shifts to insure continuous operations and afford extra personnel required for critical periods. Each shift must—
 - (a) Keep abreast of the current situation.
 - (b) Maintain the operations map.
 - (c) Evaluate incoming messages and dispatch pertinent information to the Operations Section of the Exercise Director's Headquarters.
 - (d) Maintain the operations journal.
 - (e) Safeguard classified information received and insure its dissemination only to authorized personnel.
 - (f) Insure that reports are promptly and properly disseminated.
- (11) In joint exercises each of the participating Armed Forces should maintain an operations room organized and operated in a manner similar to that set forth in this paragraph.

c. School subsection.

- (1) Reference paragraphs 24 through 26, and appendix III.
- (2) The Umpire School is designed to provide umpires with general background information on the exercise, tactical and logistical refresher instruction, and a detailed course

in umpiring techniques to include the duties of umpires, the technique of assessment of casualties, computation of fire power, evaluating effects of atomic bursts, and umpiring contacts between opposing units.

- (3) The Chief of this subsection may also serve as Director of the Umpire School. He plans, organizes, and supervises the Umpire School.
- (4) The organization of the Umpire School on a departmental basis permits the delineation of definite responsibilities to the departments for the preparation and presentation of instruction. A suitable departmental organization is outlined below:
 - (a) A Tactics Department responsible for the preparation and presentation of tactical refresher instruction applicable to the units participating in the exercise. Included should be the effects of the atomic weapons and CBR on tactics.
 - (b) An Umpiring Department responsible for the preparation and presentation of classroom instruction to Ground Force umpires on the technique of umpiring each type of unit that will participate in the exercise. Umpires should be instructed as to the actions to be taken when a simulated atomic and/or CBR attack occurs in the area of the unit to which they are assigned.
 - (c) A Field Training Department responsible for the preparation and presentation of

practical umpiring instruction for all umpires. This department will coordinate with all of the other departments to insure that coordinated instruction is given in practical field work. Instructors from all departments should be made available to assist the Field Training Department in the presentation of practical instruction. The Field Training Department should present a minimum of simulated atomic or CBR explosions to give the umpires practical work in this type problem.

- (d) A Communications Department responsible for the preparation and presentation of classroom communication instruction assists the Field Training Department in the preparation and presentation of practical communication instruction.
- (e) The Enlisted Driver-Radio Operator Training Department responsible for supervision of driver-radio operator training. Umpire support units may assist in this training.
- (f) An Air Force Department responsible for all instruction presented to Air Umpires including instructing in Air-Ground operations for Ground Umpires.
- (g) An Intelligence Department responsible for the preparation and presentation of instruction to all umpires on the intelligence organization and aspects of the exercise and the techniques of umpiring

intelligence activities. Assists the Field Training Department in injecting intelligence into practical exercises.

- (5) Plans for the organization and operation of the Umpire School should include—
 - (a) Provision for procurement and maintenance of classroom facilities and training aids. Classrooms with a normal capacity of 50 students should be available for the simultaneous use by the following student groups:
 1. Division and Higher Headquarters Umpires.
 2. Infantry Regimental and Battalion Umpires.
 3. Infantry Company and Platoon Umpires.
 4. Armored Combat Command and Armored Battalion Umpires.
 5. Armored Company and Platoon Umpires.
 6. Division Artillery and Artillery Battalion Umpires.
 7. Mortar, Artillery, and Atomic Fire-markers.
 8. Technical and Administrative Service Umpires.
 - (b) The following training aids are desirable for umpire training:
 1. Vu-Graph with Screen 102" square.
 2. 16-mm Projector.
 3. Public Address System (Indoor and Outdoor).
 4. Opaque Projector (Signal Corps Projector PH 132—FM 21-8).

5. Blackboards, 6'x8' and 4'x4'.
6. Chartboards.
7. Lighted lecterns.
8. Pointers, 10' and 4'.
9. Boyd stand (FM 21-8).
10. Easels.
11. Compasses.
12. Radios for division umpires field training exercises: Not mounted in vehicles, 12-AN/PRC 6 and 5-AN/GRC 10; Mounted in vehicles, 4-AN/VRC 9, 4-SCR 193, and 19-AN/PRC 8.
13. Communications for a Communications Field Exercise; an outdoor PA system and the following radios: AN/PRC 8, AN/PRC 6, AN/GRC 10, AN/VRC 9, SCR 193.
14. Atomic simulators for field training exercises.

d. Reports and Records Subsection. This subsection—

- (1) Provides the chief umpire with daily and phase summaries of the maneuver to include, but not limited to, status of unit and individual training, tactics and techniques, administration, logistical support, and supply economy.
- (2) Evaluates, compiles, edits, and writes material for the umpire section of the final report and historical reports.
- (3) Furnishes data to the Chief Umpire for the final critique.

- (4) Prepares the following forms: spot report, daily and phase summaries, special reports, and check lists; and prepares directives to guide personnel in the preparation of the above forms.
- (5) Coordinates with other sections in the preparation of report forms and check lists.

e. *Special Weapons Subsection.*

- (1) This section consists of an operations officer, an evaluation group, and a recorder.
 - (a) The operations officer and the chief of the evaluation group should be senior combat arms officers with a knowledge of atomic and CBR warfare.
 - (b) Members of the evaluation group should be combat arms officers of mature judgment; special training in atomic weapons effects is desirable. At least one member should be familiar with atomic delivery means. Another member should be well qualified in CBR activities.
- (2) This section—
 - (a) Establishes a system for umpiring and supervises atomic and CBR play.
 - (b) Assists the Schools Subsection in matters pertaining to atomic and CBR play.
 - (c) Umpires the following activities:
 1. Staff procedures and operations for employment of these weapons.
 2. Assessment of casualties and damages resulting from atomic and CBR attack.
 - (d) Prepare reports.
- (3) The Operations Officer—

- (a) Directs the functioning of the Special Weapons subsection.
- (b) Keeps the chief umpire informed of the atomic and CBR phase of the exercise.
- (c) Supervises the umpiring relating to atomic and CBR activities, coordinating with other umpiring activities.
- (d) Supervises the analysis of atomic and CBR play for inclusion in final reports.

(4) Evaluation Group—
Under the supervision of the senior evaluation officer, this group:

- (a) Prepares atomic and CBR tables, templates, and computers.
- (b) Prepares implementing instructions for unit umpires.
- (c) Assists in determining casualties and damages and insures that casualty and damage reports are transmitted to umpire headquarters.
- (d) Prepares a final report covering atomic and CBR play.

(5) The Recorder—
(a) Maintains a journal of atomic and CBR plans.

(b) Assembles and files umpire reports and prepares the atomic and CBR section of the daily report for the chief umpire.

9. Supply and Transportation

a. In addition to planning and supervising functions, this section is also an operating section. Since the Umpire Group does not have special staff sections

concerned with logistical matters normally found on a Division Staff, these duties must be performed by this section. This section is organized into two sub-sections—

- (1) Supply Subsection.
- (2) Transportation Subsection.

The chief of the Supply and Transportation Section assists and advises the chief umpire on supply, service, transportation, miscellaneous related matters and supply economy.

b. Supply Subsection. This subsection—

- (1) Determines requirements and procures supplies and equipment necessary to support the umpire group, such as—
 - (a) Special umpire supplies and equipment (flags, shoulder loops, armbands, casualty and vehicle damage tags, etc.).
 - (b) Blank ammunition, simulators, pyrotechnics, and firing devices.
 - (c) POL supplies.
 - (d) Army aircraft, including aircraft equipped with radiological survey equipment, loud speakers, and (atomic burst) simulators for marking atomic burst and fall-out areas.
 - (e) Expendable supplies for administration of the Umpire Headquarters.
 - (f) Individual and organizational equipment.
 - (g) Rations, when Umpire Group operates a mess.
- (2) Procures classroom facilities and training aids.

- (3) Determines number of vehicles required by the Umpire Group.
- (4) Maintains and repairs supplies and equipment.
- (5) Maintains property accounting and responsibility.
- (6) Schedules and supervises issue and turn-in of property. Coordinates this activity with the Personnel and Administration Section.
- (7) Coordinates with the Communications Officer for the receiving and distribution of signal supplies and equipment required by the Umpire Group.
- (8) Establishes and operates supply and service points to render close logistical support to umpires during the exercise.
- (9) Supervises the preparation of Statements of Charges, Statements of Collection, and Reports of Survey.
- (10) Arranges for laundry and dry cleaning service for umpire personnel.
- (11) Supervises logistical administration including preparation of the final logistical report as pertains to the Umpire Group.

c. Transportation Subsection. This subsection—

- (1) Procures and distributes army aircraft and vehicles required by the Umpire Group.
- (2) Operates a motor pool and provides maintenance for vehicles of the Umpire Group.
- (3) Requisitions and distributes POL.
- (4) Supervises installation of conversion kits for radios in vehicles. Coordinates this activity with the Communications Section.

- (5) Coordinates with the Schools subsection for supervising the instruction of drivers for umpire vehicles.
- (6) Establishes and operates necessary POL distribution points and maintenance pools in the field to support umpire vehicle requirements during the operational phase of the exercise.
- (7) Supervises the investigation of motor accidents and the submission of required reports.
- (8) Coordinates with Supply Officer and Communications Officer to assure procurement of vehicles with the proper voltage system for radio installation.
- (9) In planning vehicle requirements for joint exercises the following chart is published as a guide.

	$\frac{1}{2}$ T Trucks	$\frac{3}{4}$ T Trucks	$2\frac{1}{2}$ T Trucks	$\frac{1}{4}$ T Trailers
One Armored Division-----	34	57	-----	16
One Infantry Division-----	38	62	-----	27
One Airborne Division-----	44	74	-----	32
Units above division level-----	20	10	-----	-----
Signal support-----	30	50	40	38
Other sections-----	14	6	16	-----

The vehicles listed above consist of the initial issue to umpires. There should be an additional 10 percent based on an initial issue of new vehicles—if vehicles are old the figure will require revision upwards. Air-

craft are assigned in accordance with instructions of the Chief Umpire.

- (a) The number of vehicles issued to signal support troops will vary, depending upon the type signal troops in support, how extensive the wire laying is to be, and other factors.
- (b) At least one-half of the $\frac{1}{4}$ -ton and $\frac{3}{4}$ -ton trucks will require radios. Consideration must be given to the source of mountings for these sets—if they cannot be procured from Signal sources, modification by Ordnance may be necessary.

10. Communications

- a. This section—
 - (1) Plans and supervises all communication facilities for the Umpire Group to include—
 - (a) Installation, operation, maintenance, and repair of the Umpire Communications System.
 - (b) Technical inspections of personnel, installations, and equipment.
 - (2) Exercises operational control of all Signal and Communication personnel and units assigned or attached to the Umpire Group.
 - (3) Maintains liaison with Communication Officer, Exercise Director Headquarters.
 - (4) Prepares and publishes the Umpire Group SOI and SSI, based on the Signal Plan of the Maneuver Director.
 - (5) Coordinates and supervises all photographic agencies of the Umpire Group.

- (6) Furnishes instructors for the Umpire School.
- (7) Operates schools for radio operators when required.
- (8) Procures, receives, stores, and distributes signal supplies and equipment.

b. The organization of this section will in general follow that of Corps or Army communications section as set forth in FM 11-22. The size of this section will be influenced by the size of the participating units. In general, the communications section should consist of a Section Headquarters, Administrative-Personnel Section, Supply Section, Plans and Operation Section, and a Photographic Section.

c. Support Organizations.

- (1) Installation, operation, and maintenance of the umpire communications system are usually accomplished by the attached signal support units. These signal support units should be grouped under the operational control of one communications officer, provide all personnel required to establish communications within the Umpire Headquarters, between the Umpire Headquarters and field echelons, and furnish communications support to the individual unit umpires in the field. Where appropriate units are not available, or personnel having the proper training cannot be obtained, extensive re-training of available units and personnel is necessary. This factor influences the phase-in time of signal support personnel.

(2) Signal support units should arrive in the exercise area sufficiently in advance of the exercise to receive communications equipment, install vehicular, wire, and fixed-plant types of equipment, test all wire and radio circuits, and correct all deficiencies in equipment, supplies, and spare parts prior to the school and field training for umpires. The planning staff from both Army and Air Force sources should be present in sufficient time to coordinate the phasing-in of personnel and equipment.

d. Umpire Communications Plan.

(1) Prior to estimating the requirements for signal support troops, the scope and magnitude of the exercise and the degree of umpire control to be employed must be known. Coordination with the Chief Umpire and the Operations and Training Officer is essential in the preparation of the Umpire Communications Plan. The Umpire Communications Plan, in the initial phases of planning, must be sufficiently flexible to fit any changes in the overall plan for the exercise. Large-scale exercises require extensive communications facilities of all types. The communications officers should plan to utilize, wherever possible, commercial communications facilities, utilizing field headquarters and communications centers to channelize or zone the report message traffic from the unit umpires. Field communication centers, equipped with all means of

communication, accept traffic from the unit umpires and transmit via teletype and radio to Umpire Headquarters, utilizing high speed equipment to support the large traffic volume. In addition, communications facilities must be provided to transmit Air Umpire reports from Air Bases, Aggressor Joint Operations Center, and the United States Joint Operations Center to Operations, Headquarters Umpire Group. In most cases, due to distances, these facilities must be provided over leased commercial circuits.

- (2) Wire construction teams and switchboard operations teams should be provided at least at division, division artillery, and regimental levels. Radio communications, to be most effective, should be established with equipment having a frequency range entirely separate from that employed with the common types of tactical radio equipment, otherwise, radio frequencies may have to be withdrawn from the tactical units and allocated to umpire use, thus depriving the tactical units of some of their communications facilities and providing a minimum of radio circuits for umpire use. Repeating frequencies within the Umpire Group add to the interference on the Umpire Group nets. With all tactical and Umpire radio channels sharing the same portion of the radio frequency spectrum, care must be exercised to assign frequencies which will provide radio

facilities for both tactical and umpire communications. Frequency assignments for Umpire Group are obtained from Exercise Director Headquarters. The type of radio equipment available to Umpire Group will dictate the frequencies required. The type of radio equipment will also dictate the type and quantity of support personnel required.

e. Signal Equipment.

- (1) The types and quantities of signal equipment required for the umpire communications system should be planned tentatively at least three months prior to the exercise. Advance planning permits proper phase-in of equipment, adjustments in requirement lists, various changes required because of nonavailability of desired types, and the accomplishment of necessary paper work in connection with supply activities. Direct communication with supply activities of the Department of the Army and other agencies should be authorized. Communication equipment requirements are predicated on—
 - (a) Scope and nature of the exercise.
 - (b) Size and equipment of participating forces.
 - (c) Degree and scope of Umpire Control.
 - (d) Reporting channels to be employed.
 - (e) Types and frequency of reports.
 - (f) Requirements for alternate means of communication.
 - (g) Desires of Chief Umpire and Staff.
- (2) Phase-in time of equipment and support troops is predicated on—

- (a) Starting date of the exercise.
- (b) Length of premaneuver training.
- (c) Vehicular installation and equipment assembly lead time.
- (d) Supply system lead time.
- (e) Search time for available equipment.
- (f) Available planning time.

APPENDIX III

UMPIRE TRAINING PROGRAM

The following training program may be used as a guide for the preparation of umpire training schedules. If the exercise plan calls for special operations, then the schedule must be modified to include umpire training in these special operations.

Subject	Hours
<i>Introductory</i>	2
Official Welcome	½
Purpose and Scope of Exercise	½
Maneuver Area Rights and Restrictions	½
Participating Troops	1
<i>General Subjects</i>	47
Umpire School Organization and Umpire Organization	1
Supply and Supply Economy	1
Orientation on Aggressor	1
Aggressor Demonstration	1
Safety Precautions	1
Map Reading	5
Utilization of Intelligence	2
Reconnaissance of Exercise Area	8
Maneuver Control	1
Landmine Warfare	2
Chemical and Biological Warfare	2
Employment of Pyrotechnics and Control Devices	1
Orientation on the Air-Ground System	1

Subject	Hours
<i>General subjects—Continued</i>	
Communication Plan with Channels for the Exercise	1
Radio-Telephone Procedure	1
Operation of Radio Sets and Communication Security	1
SOI-SSI-SOP	1
Communication Field Exercise with Review	3
Conduct of the Maneuver, Maneuver Control, Area Rights and Restrictions	1
Command Post Exercise	8
Atomic Aspect of the Exercise	1
Organization and Tactics (concurrently by umpire assignment)	2
Artillery	(2)
Antiaircraft Artillery	(2)
Armored Units	(2)
Organization of Infantry and Airborne Divisions	(1)
Employment of Infantry in Offensive and Defensive Operations	(1)
Organization and Operation of Airborne Corps*	(1)
Airborne Assault*	(1)
Tank-Infantry-Artillery Team	1
<i>Umpiring</i>	22
Umpiring Duties, General	1
Tactical and Organizational Factor of Ground Umpiring	2
Capture of Personnel and Materiel	1
Assessment of Casualties and Damages	1
Umpiring Landmine Warfare	1
Computation of Losses Due to Chemical Agents	1
Casualty and Damage Assessments Due to Chemical and Biological Attack	1

*Used only when exercise is predominately an airborne one or is required for proper umpire orientation. Time to be taken from open time.

Subject	Hours
<i>Umpiring—Continued</i>	
Duties of Umpires in the Atomic Play of the Exercise	3
Obstacles and Delays	1
Umpire Records and Reports	2
Intelligence (concurrently by umpire assignment)	2
Army Security Agency Umpire Duties	(2)
Field Operations Intelligence Umpire Duties	(2)
CIC Umpire Duties	(2)
G2 Air Umpire Duties	(2)
IPW Umpire Duties	(2)
Order of Battle Umpire Duties	(2)
Photo Interpreter Umpire Duties	(2)
Technical Intelligence Umpire Duties	(2)
Censorship Umpire Duties	(2)
Document Analysis Umpire Duties	(2)
Recording Teams Umpire Duties	(2)
Interpreter and Translator Umpire Duties	(2)
Review of Umpire Duties	1
Examination	1
<i>Practical Umpiring Training</i>	42
Field Demonstration of Umpire Methods	2
Practical Field Work to Include Rehearsal with Aggressor Force	24
Testing of Communications	8
Atomic Weapons Play Umpiring	8
Scheduled Time	113
Open Time	7
Total	120

APPENDIX IV

SAFETY PRECAUTIONS

1. *General.* The following rules apply to the handling of all explosives and pyrotechnics:
 - a. Explosives will be handled only by personnel who have received individual instruction from a qualified instructor.
 - b. All personnel will be instructed in safety precautions of types of ammunition and explosives to be used.
 - c. One person will be made responsible for observance of safety precautions in all tasks involving the use of explosives.
2. *Simulator, Gunflash M-110.* Each simulator contains approximately $\frac{1}{4}$ pound of explosives and is detonated by an electric blasting cap.
 - a. Smoking is prohibited while handling ammunition.
 - b. Keep ammunition away from heat.
 - c. Handle ammunition carefully and do not apply pressure or sudden impact as the electric blasting caps are sensitive.
 - d. Primed ammunition should not be transported.
 - e. Electric blasting caps should not be carried in pockets.
 - f. The loader must disconnect the cable from the control box and take the control box forward with

him to the simulator bank. The cable must also be disconnected from the simulator bank.

g. Load the simulator before connecting the cable. Return to the firing position with the control box and connect the cable to the control box.

h. Make certain all personnel are at least 150 feet from the simulator during firing.

i. Wait at least 5 minutes before investigating misfires.

3. *Simulated Hand Grenades (commercial type).* The grenades are activated by a pull-type friction igniter. The commercial type grenade explodes 5 to 8 seconds after the firing device is pulled.

4. *Practice Antitank Mine.* The practice antitank mine normally contains no explosive in the body of the mine. The fuze contains the charge and is activated by pressure.

a. Inspect the fuze assembly and the fuze well for any damage or obstruction before arming.

b. Screw the fuze assembly finger tight. *Do not use any tools.*

c. The mine should be *dug in* before it is armed.

d. Handle the practice mine with the same care given a live service mine.

5. *Flash and Sound Signal M-74.* This type pyrotechnic is fired from a pyrotechnic pistol M-8 or pyrotechnic projector M-9 and bursts at a height of approximately 200 feet.

a. Fire the pyrotechnic pistol or projector at a vertical angle of at least 60°.

b. Be sure no one is in the line of fire.

c. Do not fire directly over troops.

6. *Smoke Grenades and Smoke Pots.* a. *Smoke Grenades.*

- (1) Do not handle grenades by the pull ring.
- (2) When removing the safety pin, hold the fuze lever firmly against the grenade body until grenade is thrown.

b. *Smoke Pots.*

- (1) Keep head well to one side when igniting smoke pots.
- (2) Remain 25 feet away from burning pots.

7. *Small Arms Blank Ammunition.* Do not insert foreign objects in the cartridge case or in the base of the weapon.

8. *Safety Radii.*

Type Explosive or Pyrotechnic

	<i>Feet</i>
Simulator, gunflash M-110-----	150
Booby-trap, flash T-80-----	5
Booby-trap, illuminating T-81-----	5
Booby-trap, illuminating T-82-----	5
Simulator, hand-grenade, T-79-----	30
Grenade, hand, simulator (commercial type)-----	15
Grenade, smoke, white HC AN-MS-----	15
Grenade, smoke, colored M18-----	15
Pot, smoke, HC M1-----	25
Mine, antipersonnel, M8 (T4)-----	15
Mine, antipersonnel T 34-----	3
Mine, antitank, M12 (T8E1)-----	5
Mine, chemical-----	100
Cal .30 ammunition blank-----	60
Cal .45 ammunition blank-----	60
Cal .50 ammunition blank-----	60
10 gage shotgun blank-----	60

9. *Chemical Land Mines.* Chemical land mines must be filled with a harmless simulated agent before

firing, and whenever possible should be buried just beneath the surface. If the mine is buried, a primacord burster of 6 to 8 feet should be attached by means of two wires on the back of the mine. If the mine is not buried, 2 to 3 feet of primacord is used.

APPENDIX V

THE FIRE POWER COMPUTER

1. A simple fire power computer, applicable to both United States and Aggressor forces, for use by unit umpires in computing fire power scores in paragraphs 57 and 58, is described in the following paragraphs.
2. The computer consists of a cover (fig. 15) and four inserts (figs. 16-20). The cover indicates ranges at which the fire power of individual weapons (side A) and the fire power of infantry units (side B) may be effective. The inserts contain the fire power for units from squad to battalion size (side B). The fire power scores for units are based on all the weapons normally engaging in fire fights (par. 58). When damage of weapons in a unit is assessed, the given fire power score must be reduced by the scores of the weapons damaged. There are four inserts; one for United States weapons and the infantry battalion (fig. 16), one for United States Armored Infantry Battalion and United States Airborne Infantry Battalion (fig. 18), one for Aggressor weapons and Aggressor Rifle Battalion (fig. 19), and one for Aggressor Mechanized Rifle Battalion and Aggressor Airborne Rifle Battalion (fig. 20). Information concerning fire power and casualty assessment, applicable to both United States and Aggressor

forces, has been extracted and printed on the back of the inserts for ready reference (fig. 17). The same cover may be used with either insert. Inserts for other units may be prepared and used when the provisions of an exercise require it (for example, arctic or jungle exercises).

3. The cover is made from a 4" x 11 $\frac{3}{4}$ " piece of the 100 lb weight white index paper, or similar material. When folded and glued (fig. 15), a 4" x 5 $\frac{3}{4}$ " cover envelope is formed.

4. The inserts are made from a 5 $\frac{3}{4}$ " x 8" piece of paper of the same type as the cover. When folded (figs. 16-20), a 4" x 5 $\frac{3}{4}$ " insert is formed. When printed on one card, the position of "A" and "B" should be carefully noted. The inserts shown in figures 18 and 20 are used with side "A" of figures 16 and 19, respectively. For convenience and ready identification, it is desirable that information pertaining to the United States forces be printed on paper of a color different from that pertaining to the Aggressor forces.

5. The fire power computer is assembled by sliding the insert into the cover. Slide "A" of insert matches side "A" of cover. After the insert is placed in the cover, the fire power scores of the various weapons, for a given range, may be read through the open slot of side "A". At a given range, the fire power score of infantry units from a squad to and including a battalion, can be determined on side "B".

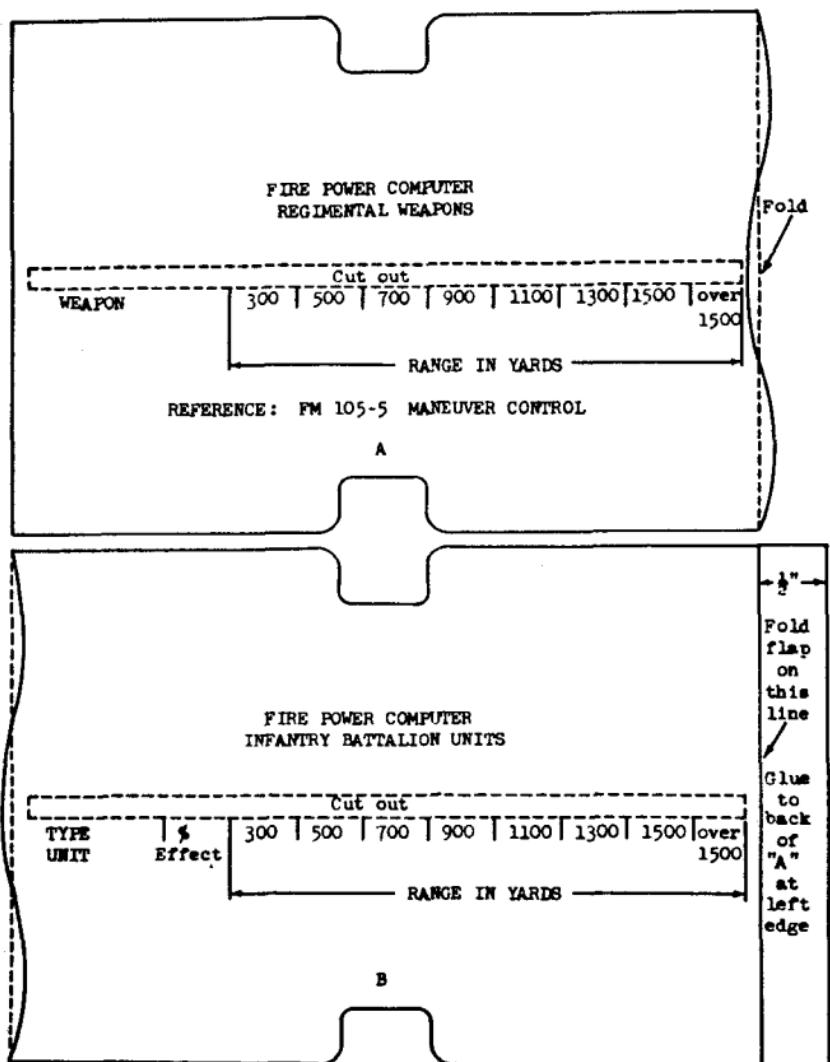


Figure 15. Fire power computer (cover).

FIRE POWER COMPUTER—US WEAPONS

155 MM HOW	25	25	25	25	25	25	25	25
105 MM HOW	20	20	20	20	20	20	20	20
75 MM PACK HOW	15	15	15	15	15	15	15	15
90 MM GUN	15	15	15	15	15	15	15	15
40 MM GUN DUAL	16	16	16	16	16	16	16	16
105 MM RIFLE	20	20	20	20	20	20	20	20
75 MM RIFLE	15	15	15	15	15	15	15	15
57 MM RIFLE	10	10	10	10	10	10	10	10
2.36 ROCKET	6	6	6	—	—	—	—	—
3.5 ROCKET	6	6	6	6	—	—	—	—
4.2 MM MORTAR	15	15	15	15	15	15	15	15
81 MM MORTAR	12	12	12	12	12	12	12	12
60 MM MORTAR	6	6	6	6	6	6	6	6
MG 50 CAL	10	10	10	10	10	10	10	10
MG 50 QUAD	40	40	40	40	40	40	40	40
MG HVY 30	10	10	10	10	10	10	10	10
MG LT 30	6	6	6	6	6	3	3	—
BAR	3	3	1.5	1.5	—	—	—	—
RIFLE	1	1	.5	.5	—	—	—	—
CARBINE	1	.5	—	—	—	—	—	—

FIRE POWER COMPUTER—US INFANTRY BATTALION

BN	775	775	610	610	430	390	390	290
RIFLE CO	190	190	140	140	65	65	65	30
RIFLE PLAT	50	50	30	30	10	5	5	—
RIFLE SQD	10	10	5	5	—	—	—	—
WPN SQD	10	10	10	10	10	5	5	—
WPN PLAT	50	50	50	50	50	50	50	30
60 MM MORT SECT	20	20	20	20	20	20	20	—
57 MM RIFLE SECT	30	30	30	30	30	30	30	30
HVY WPNS CO	200	200	200	200	200	200	200	200
MG PLAT	40	40	40	40	40	40	40	40
AT PLAT	110	110	110	110	110	110	110	110
MORTAR PLAT	50	50	50	50	50	50	50	50

MAXIMUM RANGE CREDIT

90 MM GUN	(MOVING)	1000	(STATIONARY)	14000
75 OR 76 MM GUN	—	1000	—	13000
106 R R	—	1000	—	8000
75 R R	—	1000	—	7000
57 R R	—	800	—	1000
4.2 MORTAR	—	—	—	6000
81 MM MORTAR	—	—	—	3000

B

Figure 16. Fire power chart—US (insert).

FIRE POWER

1. An attacking unit may advance against an opposing unit when it has fire power superiority as follows:
 - a. Normal minimum of 2 to 1, preferably 3 or 4 to 1.
 - b. Defender with good cover and concealment, 5 to 1.
 - c. Surprise flank or rear attack, 1 to 1 or 2 to 1.
2. Unit using fire and maneuver in frontal attack; credit unit with twice actual fire power.
3. Unit attacking frontally by fire and maneuvering to strike defenders' flank or rear; credit unit with three times actual fire power.
4. Effects on fire power of:
 - a. Smoke:
 - (1) On unit firing; 50% reduction of inf fire power.
 - (2) On target; 25% reduction of inf fire power.
 - (3) On tanks, vehicles; 100% reduction of AT fire.
 - (4) On target; 25% reduction of Arty fire.
 - b. Arty fire:
 - (1) On inf unit; fire power of unit neutralized during arty fire.
 - (2) On arty btry; neutralize btry 4 minutes per btry volley fired.
 - c. Tank, SP Gun Fire: observed fire on dismounted troops neutralizes the fire power of the dismounted troops for the duration of the observed fire.
 - d. Aviation: fire power of troops under attack neutralized during attack.

CASUALTY ASSESSMENT

1. Fire by opposing inf; 1% to 3% per hour.
2. Personnel under arty fire:
 - a. Standing, running, or in trucks; 1% per btry volley.
 - b. Prone; 1/3 of 1% per btry volley.
 - c. Entrenched; 1/20 of 1% per btry volley.
3. Infantry within 100 yds of attacking tanks or self-propelled guns
 - a. Not entrenched; 3% per attack.
 - b. Entrenched; 1% per attack.
4. Four aircraft attacking dismounted troops: 50 x 100 yd area* Napalm w or 10% casualties. Fire power 100% neutralized for w/o strafing duration of the attack plus two minutes. HE bombs w or 5% casualties. Fire power neutralized same as w/o strafing above. Strafing 2% casualties. Fire power 100% neutralized only (except AA) for duration of attack.

*The long axis of the area parallel to the direction of flight is the basis for measure.

DECISIONS OF UMPIRES ARE FINAL

Figure 17. Fire power and casualty assessment notes (insert).

FIRE POWER COMPUTER US ARMORED INF BATTALION

BN	800	800	610	610	420	345	345	265
RQ AND SV CO	150	150	140	140	135	130	130	120
RCN PLAT	90	90	80	80	70	70	70	60
SCOUT SECT	20	20	15	15	10	5	5	—
TANK SECT	50	50	50	50	50	50	50	50
RIFLE SQD	10	10	5	5	—	—	—	—
SUPPORT SQD	10	10	10	10	10	10	10	10
MORT SQD	60	60	60	60	60	60	60	60
RIFLE CO	160	160	105	105	70	55	55	35
RIFLE PLAT	40	40	30	30	10	5	5	—
RIFLE SQD	10	10	5	5	—	—	—	—
WPNS SQD	10	10	10	10	10	5	5	—
MORT PLAT	35	35	35	35	35	35	35	35

B

FIRE POWER COMPUTER US AIRBORNE INF BATTALION

BN	720	720	585	585	450	395	395	290
RIFLE CO	175	175	130	130	85	65	65	30
RIFLE PLAT	40	40	25	25	10	5	5	—
RIFLE SQD	10	10	5	5	—	—	—	—
WPNS SQD	10	10	10	10	10	5	5	—
WPNS PLAT	50	50	50	50	50	50	50	30
60 MM MORT SECT	20	20	20	20	20	20	20	—
57 MM RR SECT	30	30	30	30	30	30	30	30
Hvy WPNS CO	200	200	200	200	200	200	200	200
MO PLAT	40	40	40	40	40	40	40	40
AT PLAT	110	110	110	110	110	110	110	110
MORT PLAT	50	50	50	50	50	50	50	50

B

Figure 18. Fire power chart—US (insert).

FIRE POWER COMPUTER OF AGGRESSOR WEAPONS

80 MM GUN	15	15	15	15	15	15	15	15
75 MM GUN	15	15	15	15	15	15	15	15
120 MM MORTAR	15	15	15	15	15	15	15	15
81 MM MORTAR	12	12	12	12	12	12	12	12
Hvy LQ CAL .50	10	10	10	10	10	10	10	10
HMG CAL .30	10	10	10	10	10	10	10	—
LMG	6	6	6	6	6	3	3	—
RIFLE	1	1	.5	.5				
SMG	3	(UP TO 100 YDS)						

MAXIMUM RANGE CREDIT

	MOVING	1000 YDS	STATIONARY	14000 YDS
80 MM GUN	"	1000 YDS	"	13000 YDS
75 MM GUN			"	6000 YDS
120 MM MORTAR			"	3000 YDS
81 MM MORTAR				

A

FIRE POWER COMPUTER AGGRESSOR INF BATTALION

BN	720	720	525	585	450	450	450	240
RIFLE CO	120	120	75	75	30	30	30	—
RIFLE PLAT	30	30	15	15	—	—	—	—
RIFLE SQD	10	10	5	5	—	—	—	—
MG PLAT	30	30	30	30	30	30	30	—
LG CO	160	160	160	160	160	160	160	40
LG PLAT	40	40	40	40	40	40	40	—
AA MG PLAT	40	40	40	40	40	40	40	40
LT MORT CO	110	110	110	110	110	110	110	110
MORT PLAT	35	35	35	35	35	35	35	35
AT CO	90	90	90	90	90	90	90	90
AT PLAT	30	30	30	30	30	30	30	30

B

Figure 19. Fire power chart—Aggressor (insert).

FIRE POWER AGGRESSOR MECHANIZED BATTALION

BN*	460	460	325	325	190	190	190	130
RIFLE CO	90	90	45	45	—	—	—	—
RIFLE PLAT	30	30	15	15	—	—	—	—
RIFLE SQUAD	10	10	5	5	—	—	—	—
MG CO	60	60	60	60	60	60	60	—
MG PLAT	20	20	20	20	20	20	20	—
MORTAR CO	70	70	70	70	70	70	70	70
MORTAR PLAT	35	35	35	35	35	35	35	35
AT CO	60	60	60	60	60	60	60	60
AT PLAT	30	30	30	30	30	30	30	30

* THIS BATTALION IS FOUND IN RIFLE REGIMENTS AND MEDIUM TANK REGIMENTS OF MECHANIZED DIVISIONS. THE BATTALIONS FOUND IN HEAVY TANK REGIMENTS OF MECHANIZED DIVISIONS DO NOT HAVE MACHINE GUN, MORTAR AND ANTITANK COMPANIES.

B

FIRE POWER AGGRESSOR AIRBORNE RIFLE BATTALION

BN	805	805	625	625	370	130	130	130
RIFLE CO	170	170	125	125	60	—	—	—
RIFLE PLAT	35	35	20	20	—	—	—	—
RIFLE SQD	10	10	5	5	—	—	—	—
50 MM MORT SQD	5	5	5	5	—	—	—	—
MG PLAT	60	60	60	60	60	—	—	—
MG SECT	20	20	20	20	20	—	—	—
MORT CO	70	70	70	70	70	70	70	70
MORT PLAT	25	25	25	25	25	25	25	25
AT CO	60	60	60	60	60	60	60	60
AT PLAT	30	30	30	30	30	30	30	30

B

Figure 20. Fire power chart—Aggressor (insert).

FIRE POWER COMPUTER OF AGGRESSOR WEAPONS

80 MM GUN	15	15	15	15	15	15	15	15
75 MM GUN	15	15	15	15	15	15	15	15
120 MM MORTAR	15	15	15	15	15	15	15	15
81 MM MORTAR	12	12	12	12	12	12	12	12
Hvy Mg Cal .50	10	10	10	10	10	10	10	10
Hmg Cal .30	10	10	10	10	10	10	10	—
Lmg	6	6	6	6	6	3	3	—
RIFLE	1	1	.5	.5				
SMG	3	(UP TO 100 YDS)						

MAXIMUM RANGE CREDIT

80 MM GUN	MOVING	1000 YDS	STATIONARY	14000 YDS
75 MM GUN	"	1000 YDS	"	13000 YDS
120 MM MORTAR			"	6000 YDS
81 MM MORTAR			"	3000 YDS

1

8

THE POWER SOURCE AGGRESSOR IN THE BATTLE OF THE BATTALION

Figure 21. Fire power chart—(insert)—front—when printed on one card.

APPENDIX VI

THE CHEMICAL CASUALTY COMPUTER

1. A simple chemical casualty computer (fig. 28), applicable to both United States and aggressor forces, for use by unit umpires in computing the losses due to chemical warfare, is described in the following paragraphs.
2. The computer consists of four discs (figs. 22-27). Disc "A" (fig. 22) has three agents represented. Phosgene and "G" agents have three weather conditions indicated: Lapse, Neutral, and Inversion. Mustard shows three concentrations: Vapor or light (odor—no droplets), Medium (odor—tiny droplets), and Heavy (odor—large droplets or puddles). Disc "B" (fig. 24) shows wind speeds for use with CG and "G" agents only. This disc also shows the temperature conditions for use with mustard only: Hot and humid (90° and over, 80 percent humidity), Warm (65° – 85°), Cool (65° and below). Disc "C" (fig. 25) lists the type of terrain for use in computing CG and "G" agents and also shows vegetation conditions for use with mustard. Disc "D" (fig. 26) shows five conditions of personnel readiness for use with CG and "G" agents, four conditions for use with mustard gas, and a large arrow that points to the percent of casualties that can be expected from CG

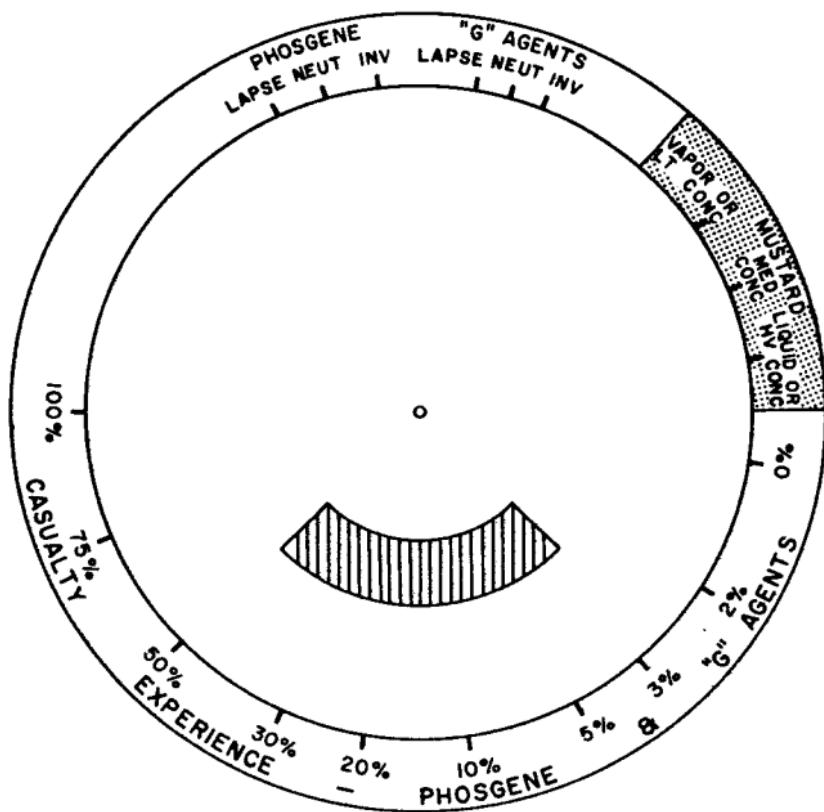
and "G" agents shown on Disc "A" (fig. 22). To correctly orient both sides of Disc "A", aline the reference line through "Casualties CG, 'G' Agents," figure 26, with the tick mark shown in figure 27.

3. The computer is used as follows:

a. CG and "G" agents: The arrow on Disc "B" (fig. 24) near "wind speed" is set to point at the type of weather condition prevailing. The arrow on the Disc "C" (fig. 25) near "terrain" is set to point at the speed of the wind blowing as shown on Disc "B" (fig. 24). One of the five arrows on Disc "D" (fig. 26) showing the state of readiness of the personnel is set to point to the type of terrain shown on Disc "C" (fig. 25). The percent of casualties that should be assessed is shown by the large arrow pointing to Disc "A" (fig. 22).

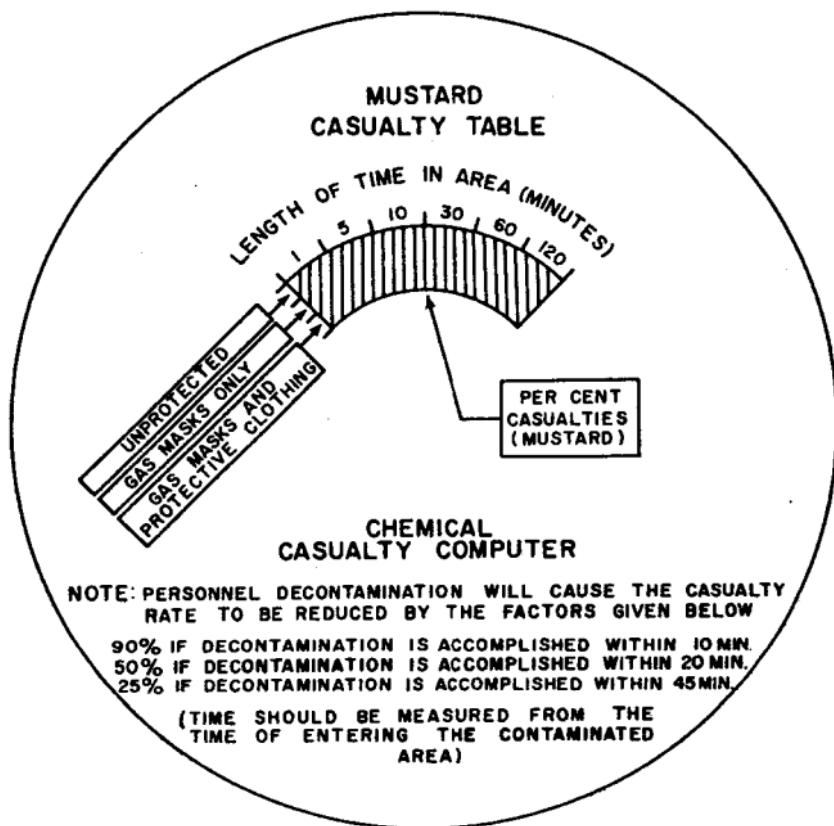
b. Mustard: The arrow on Disc "B" (fig. 24) near temperature conditions is set to point at the type concentration of mustard shown on Disc "A" (fig. 22). The arrow on Disc "C" (fig. 25) is set to point toward the temperature conditions shown on Disc "B" (fig. 24). One of the three arrows on Disc "D" (fig. 26) is set to point at the type vegetation in the gassed area as shown on Disc "C" (fig. 25). The percent of casualties that should be assessed is shown on the rear of Disc "D" (fig. 26) through an opening on the rear of Disc "A" (fig. 23).

4. The chemical casualty computer is not a standard item of issue and must be procured locally.



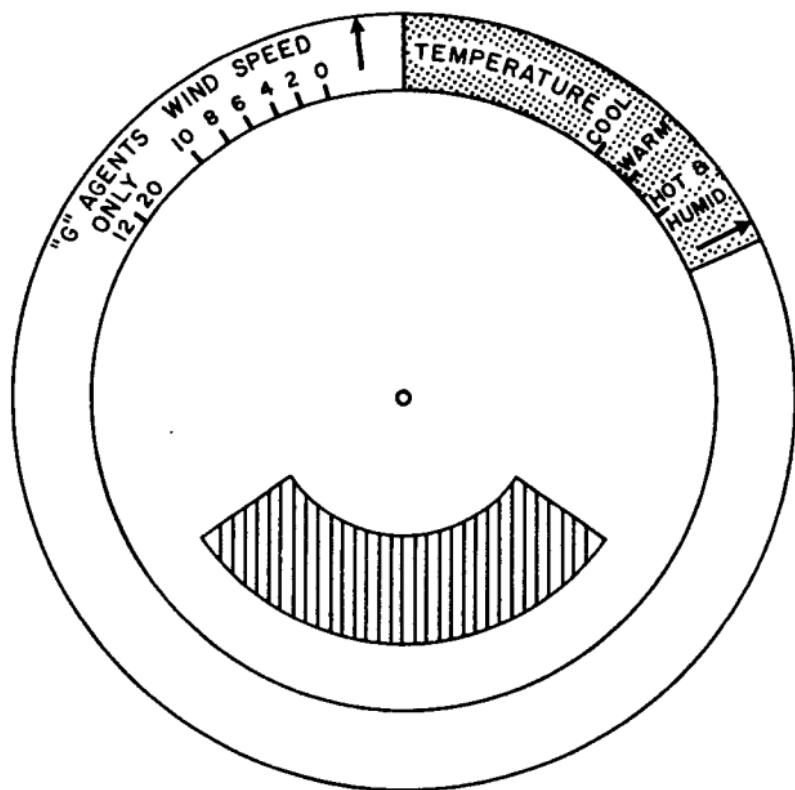
NOTE: CROSS HATCHED PORTION TO BE CUT OUT

Figure 22. Disc "A" (front).

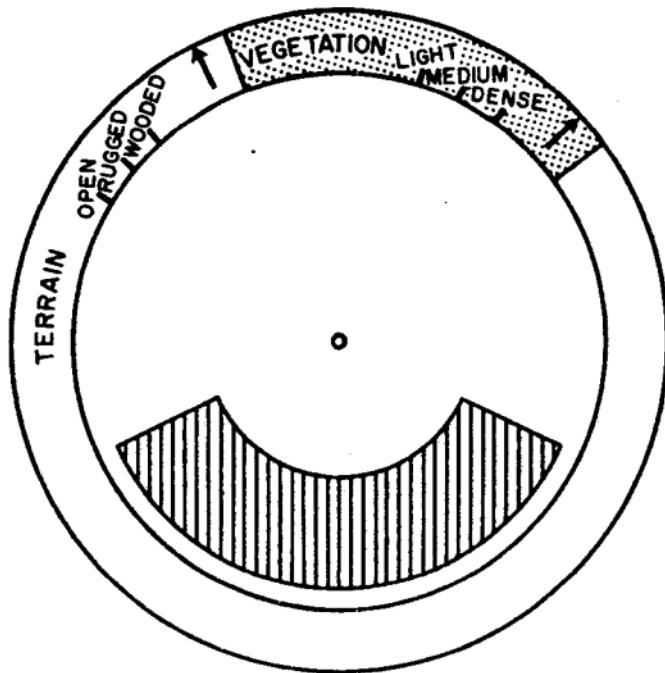


NOTE: CROSS HATCHED PORTION TO BE CUT OUT

Figure 23. Disc "A" (back).



NOTE: CROSS HATCHED PORTION TO BE CUT OUT
Figure 24. Disc "B".



NOTE: CROSS HATCHED PORTION TO BE CUT OUT

Figure 25. Disc "C".

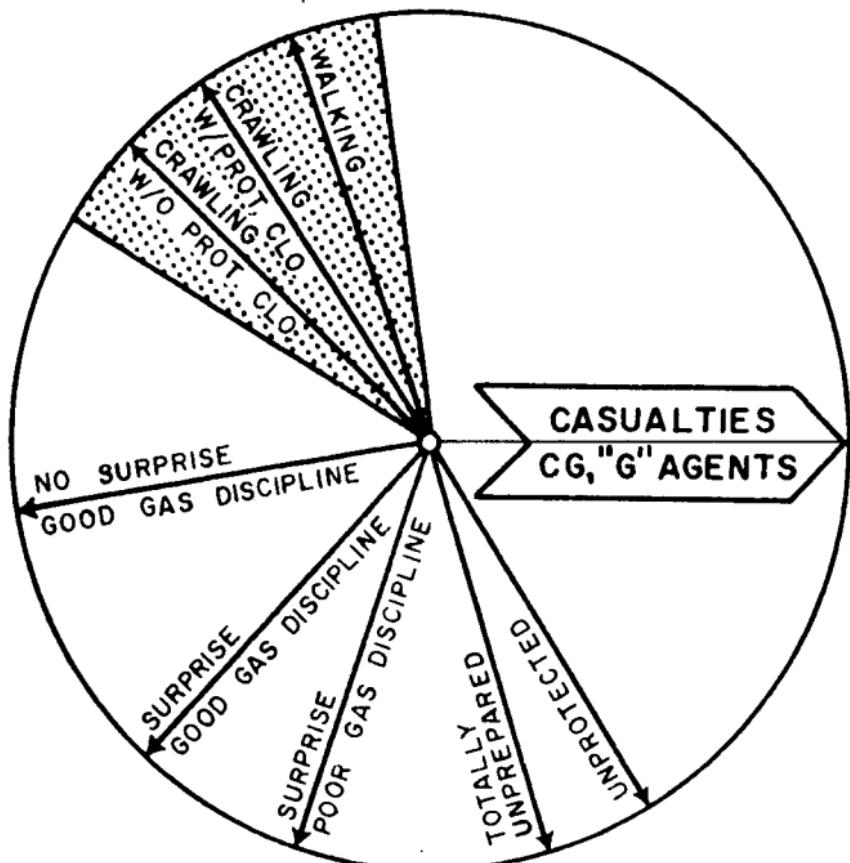


Figure 26. Disc "D" (front).

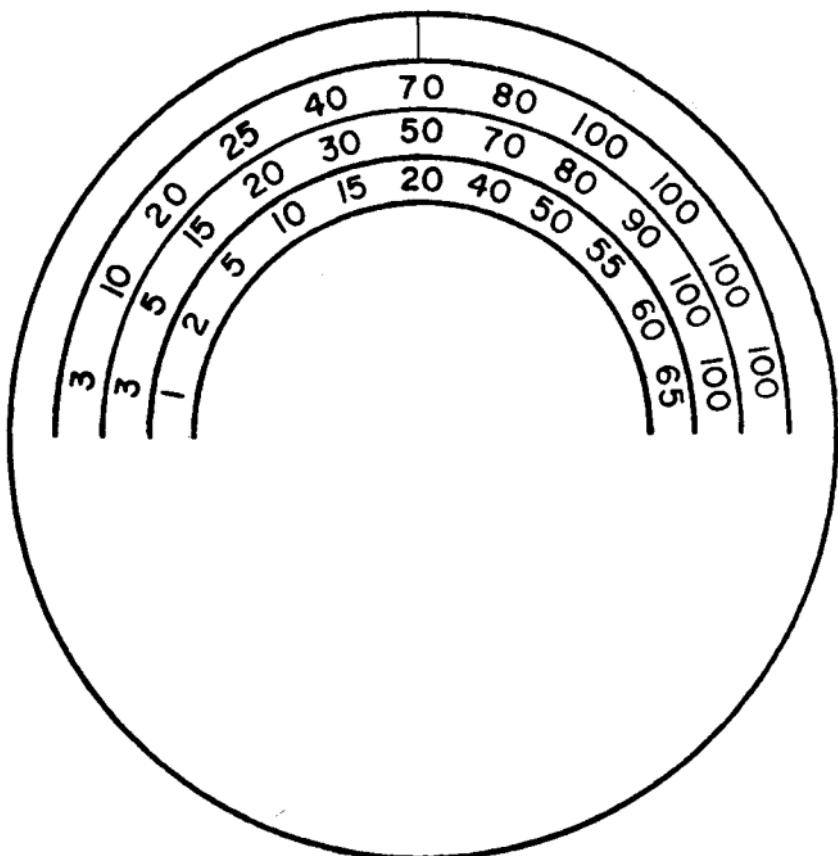


Figure 27. Disc "D" (back).

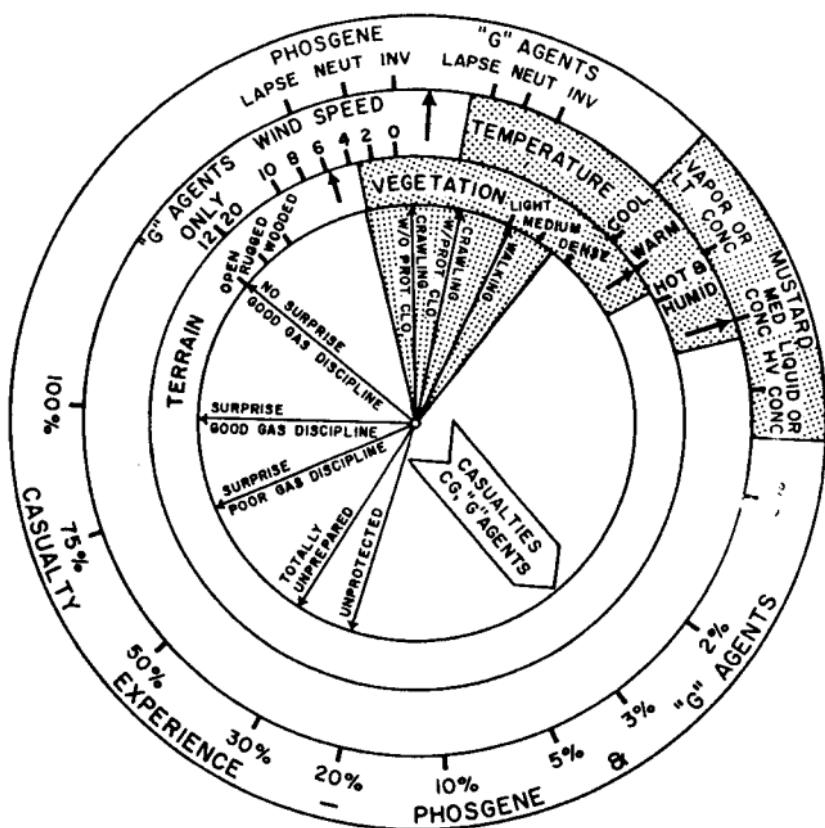


Figure 28. Front view of assembled chemical casualty computer.

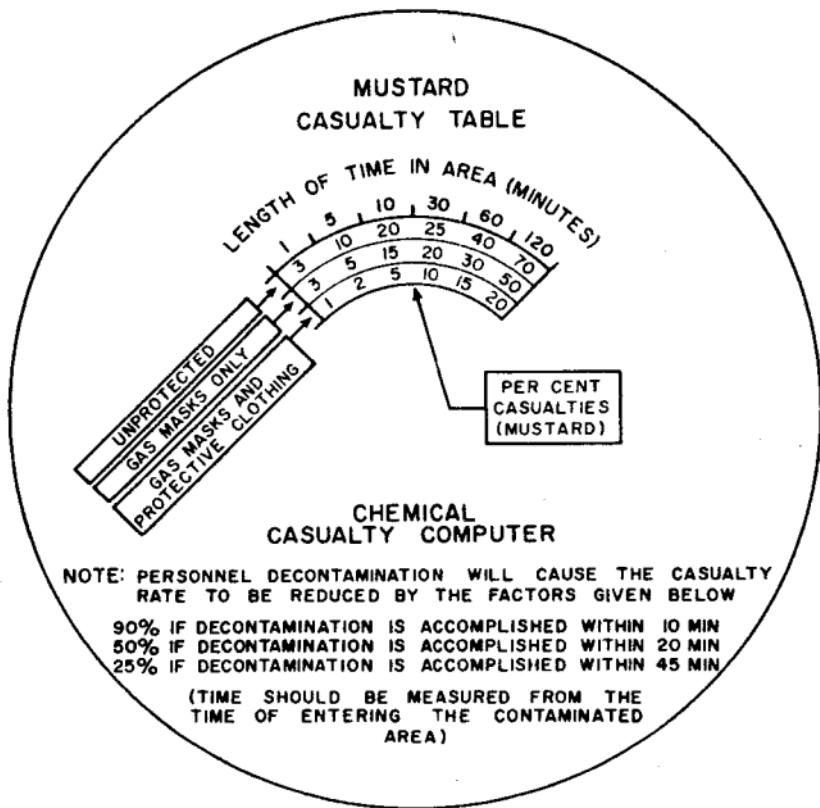


Figure 29. Rear view of assembled chemical casualty computer.

APPENDIX VII

PREPARING AND USING THE ATOMIC WEAPONS EFFECTS OVERLAYS

1. The "Atomic Weapons Effects Overlay" is designed for the use of unit umpires upon whom will fall the burden of assessing personnel casualties and equipment damage. The realism with which the atomic weapons are "played" and the successful integration of atomic weapons into the maneuver will depend to a large extent upon the manner in which the unit umpires perform their duties. The following guiding principles should be used in designing the "effects overlays":

- a. The information contained in the "effects overlays" will be unclassified.
- b. The "effects overlays" must provide the simplest possible method for assessing damage to personnel and equipment.

2. Based upon the philosophy of paragraph 1 above, the "effects overlays" must have the following characteristics:

- a. No references to yield, damage criteria, height of burst, or other classified information, or which, even though unclassified, may be used to deduce information of a classified nature, will appear on the "effects overlays."

b. Instructions to the unit umpire for determination of casualties must include percentages which he can apply to the unit under his control.

3. As far as the assessment of casualties or damage by the unit umpire is concerned, there are only two possible situations:

a. Noncontaminating Burst—Defined for the purposes of atomic play in maneuvers as an atomic burst which does *not* result in any militarily significant residual nuclear radiation contamination of the ground. A sample “effects overlay” for a noncontaminating burst is shown in figure 30.

b. Contaminating Burst—Defined for the purposes of atomic play in maneuvers as an atomic burst which results in militarily significant residual radiation contamination of the ground. A sample “effects overlay” for a contaminating burst is shown in figure 31.

4. Examination of figures 30 and 31 show that information contained on the “effects overlays” is limited to the following:

- a. Map reference.
- b. Effects circles (and indicated center).
- c. Brief but complete instructions to unit umpires on method of assessing damage.
- d. Table of percent immediate damage to personnel and equipment.
- e. Table of residual nuclear radiation dose rate levels (only in the case of a contaminating burst).
- f. Table of percent residual nuclear radiation casualties (only in the case of a contaminating burst).

5. The information contained in the tables are

merely examples of what might be done; the actual maneuver situation will dictate the detail and extent of these tables. For example, in the table of Percent Immediate Damage to Personnel and Equipment, it might be desirable to specify additional troop situations or categories of equipment; in the table of Radiation Dose Rate Levels, it might be desirable to give the dose rates at times other than those listed; and in the table of Percent Residual Radiation Casualties, it might be desirable to use other times of entry and other times of stay. The composition of these tables can be varied at the discretion of the Special Weapons Subsection at Umpire Headquarters, prior to the start of the maneuver. However, it should be pointed out that the "effects overlay" should not be over-complicated needlessly, otherwise unit umpires, untrained in atomic weapons effects, may have difficulty in applying it.

6. The damage criteria used in the preparation of the effects overlay can be varied also to suit the needs of the maneuver. For immediate casualties, an "all effects" criteria based upon thermal energy alone was used; for residual radiation casualties, a criteria of "evacuation on the first day" was used. For damage to equipment, a criteria of "not combat usable after organizational maintenance" was used. It might be desirable to specify damage criteria which emphasize the immediate destructive effects of the atomic weapon.

7. It should be noted that on the effects overlay for a contaminating burst, the radiation dose rate levels are given for the same zones that specify im-

mediate casualties. This avoids the use of separate effects circles for immediate casualties and residual effects, thereby simplifying the use of the overlay.

8. The steps in the preparation of the effects overlay by the Special Weapons Subsection at Umpire Headquarters are as follows:

a. Prior to the start of the maneuver, the Special Weapons Subsection should determine the following information:

- (1) Type of personnel situations to be used on the overlay (i. e., troops in open, troops in foxholes, troops in woods, etc.).
- (2) Categories of equipment to be used on the overlay (i. e., light equipment, heavy equipment, bridges, etc.).
- (3) For contaminating bursts only:
 - (a) Times of measured radiation dose rate levels.
 - (b) Times of entry.
 - (c) Times of stay.
- (4) Specific damage criteria to be applied in the assessment of casualties to personnel and damage to equipment.
- (5) Number and size of effects circles to be used on the "effects overlay."

b. The Special Weapons Subsection should then calculate two or three representative yields available to both sides, the following data for one or two heights of burst considered appropriate:

- (1) Percentages to be used in the assessment of casualties to personnel (both immediate and residual when a contaminating burst is used) and damage to equipment.

(2) Residual radiation dose rate levels (only in case of a contaminating burst).

c. With the information from *a* and *b* above, a set of weapons effects overlays should be prepared for the selected representative yields, heights of burst, and weather conditions. The number of different overlays should be held to a minimum and each should be given a code number. These sets of overlays should be prepared and distributed to all the unit umpires prior to the start of the maneuver.

d. Following decision of appropriate headquarters to employ an atomic weapon, the Umpire Headquarters will be furnished the following information:

- (1) Yield.
- (2) Desired ground zero.
- (3) Desired height of burst.
- (4) Time of burst.
- (5) Delivery means.

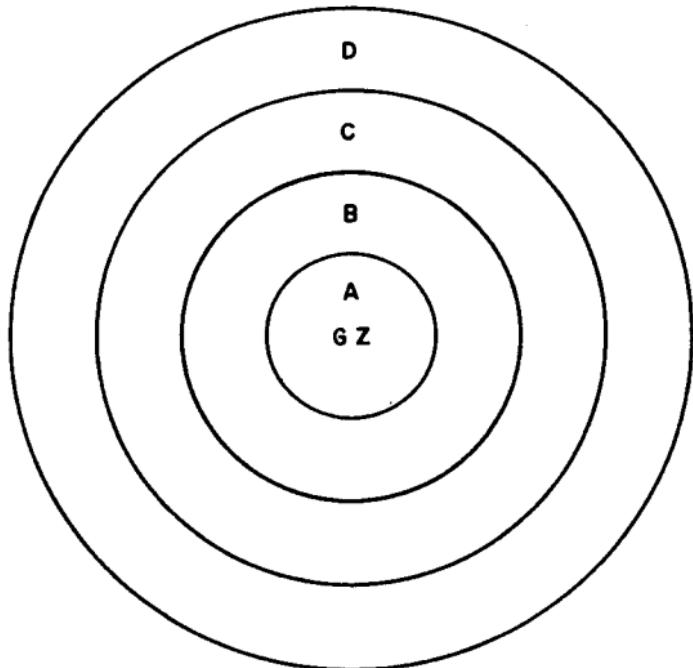
e. The Special Weapons Subsection of Umpire Headquarters will adjust the desired ground zero and desired height of burst in accordance with the CEP of the delivery means, to obtain an actual ground zero and actual height of burst.

f. Umpire Headquarters determines which of their prepared overlays most closely meets the conditions (yield, actual height of burst, etc.) and informs the unit umpire(s) concerned of the code number of the overlay to use, actual ground zero, and time of burst. In issuing instructions to umpires, the maximum use of radio or telephone communication should be made; thus unusual areas of terrain of special consideration can be described by coordinates.

9. a. If sufficient time before the intended burst is available and if none of the prepared "effects overlays" can be altered by radio or telephone message to fit the conditions of the intended burst sufficiently well, it might be desirable to prepare an "effects overlay" (fig. 32) to meet the exact conditions of the predicated climatological conditions and of terrain, reproduce it, and send it to the umpires of the affected area only.

b. Indicated in figure 32 are several shaded areas depicting shielding as a result of gross terrain features. Several high hills have afforded shielding to a certain extent in areas E, F, and G. It has been indicated in the tables that immediately behind the hills there has been almost complete shielding whereas at a greater distance, where the effects of shielding are less, the percent damage to personnel and equipment rises.

c. It is neither necessary nor desirable that the assessment of atomic casualties be carried out to the last decimal place. The realism desired will be introduced into the atomic play by producing situations which agree qualitatively in production of casualties and damage to equipment with those to be expected after an actual atomic burst. The quantitative effects need only be gross approximations; in fact, in view of the large number of variables involved in the calculations and the uncertainties as to their actual values, such approximations are just as valid. The personnel of the Special Weapons Subsection must bear this thought in mind in producing the "effects overlay."



CODE NUMBER _____

PERCENT IMMEDIATE DAMAGE TO PERSONNEL AND EQUIPMENT

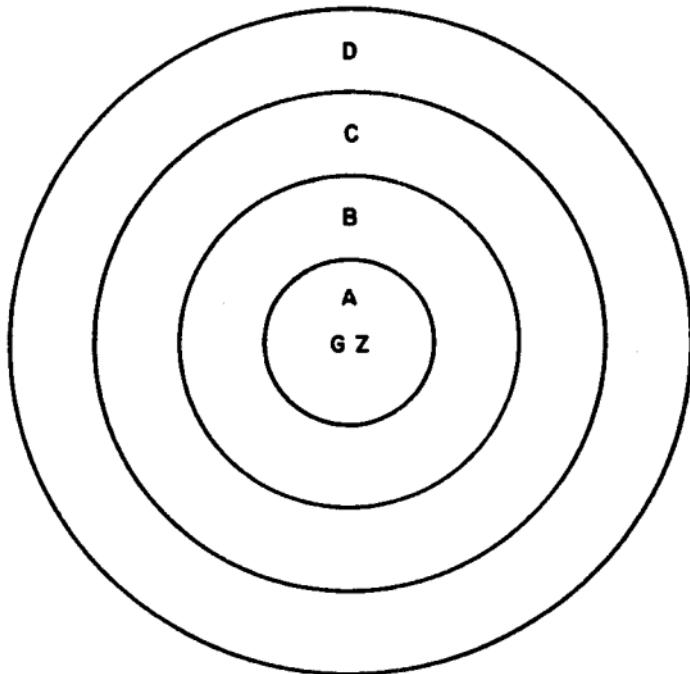
ZONE	PERSONNEL			EQUIPMENT		
	in open	in foxholes		light	heavy	
A	100	90		100	80	
B	90	60		60	20	
C	65	10		10	0	
D	15	0		0	0	

Notes: 1. Light equipment - Trucks, dumps (gas, ammo, rations), etc.
 2. Heavy equipment - Tanks, artillery, etc.

INSTRUCTIONS TO UMPIRES

1. Do not assess damage until atomic burst is simulated or marked.
2. Assess damage against unit based upon plotted positions of unit's elements.

Figure 30. Noncontaminating burst.



CODE NUMBER _____

PERCENT IMMEDIATE DAMAGE TO PERSONNEL AND EQUIPMENT

ZONE	PERSONNEL			
	in open	in foxholes		
A	100	90		
B	90	60		
C	65	10		
D	15	0		

EQUIPMENT			
light	heavy		
100	60		
60	20		
10	0		
0	0		

Notes: 1. Light equipment - Trucks, dumps (gas, ammo, rations), etc.
 2. Heavy equipment - Tanks, artillery, etc.

Figure 31. Contaminating burst.

INSTRUCTIONS TO UMPIRES

1. Do not assess damage until atomic burst is simulated or marked.
2. Assess damage against unit based upon plotted positions of unit's elements.
3. Umpires must not indicate the amount of contamination in the area unless questioned by the Radiological Defense Monitors possessing the proper survey instruments.

GROUND CONTAMINATION
NUCLEAR RADIATION DOSE RATE LEVELS
(Roentgens/hour)

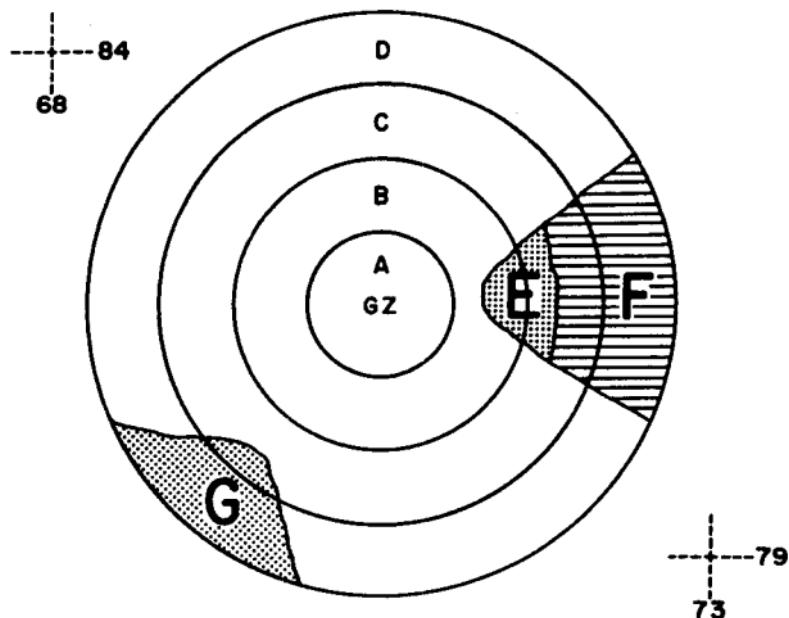
HOURS AFTER BURST	ZONES			
	A	B	C	D
0.5	6000	2400	720	240
1	2600	1000	300	100
2	1125	450	135	45
3	700	270	81	27
4	500	200	60	20
8	215	85	25	8

PERCENT RESIDUAL NUCLEAR RADIATION CASUALTIES

TIME OF ENTRY HOURS AFTER BURST	0			1			2					
	1	3	5	1	3	5	1	3	5	1	3	5
ZONE	A	100	100	100	100	100	100	75	100	100		
	B	100	100	100	100	100	100	0	75	100		
	C	100	100	100	0	30	55	0	0	0		
	D	0	50	55	0	0	0	0	0	0		

Notes: 1. Assess no casualties for times of stay less than those given in table.
2. Above figures are for troops dismounted; for troops in armored vehicles enter table with one half actual time of stay, e.g. if a tank enters Zone A, three hours after the burst and remains for two hours, 75 percent of the crew are casualties.

Figure 31—Continued.



PERCENT IMMEDIATE DAMAGE TO PERSONNEL AND EQUIPMENT

ZONE	PERSONNEL			EQUIPMENT	
	in open	in foxholes		light	heavy
A	100	90		100	80
B	90	60		60	20
C	65	10		10	0
D	15	0		0	0
Shielded Area E	5	0		0	0
Shielded Area F	10	0		0	0
Shielded Area G	5	0		0	0

Notes: 1. Light equipment - Trucks, Dumps (gas, ammo, rations) etc.
 2. Heavy equipment - Tanks, artillery, etc.

INSTRUCTIONS TO UMPIRES

1. Do not assess damage until atomic burst is simulated or marked.
2. Assess damage against unit based upon plotted positions of unit's elements.

Figure 32.—Special terrain consideration.

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BY ORDER OF THE SECRETARY OF THE ARMY:

MAXWELL D. TAYLOR,
General, United States Army,
OFFICIAL: *Chief of Staff.*

JOHN A. KLEIN,
Major General, United States Army,
The Adjutant General.

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